UNIVERSITY OF GOTHENBURG
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Master Degree Project in Knowledge-based Entrepreneurship

Innovation Activity and Stock Price Effects in the Retail Industry

a case study of the relationships created through the product development process

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Abstract

Title. Innovation activity and stock price effects in the retail industry: A Swedish experience

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Issue of study. Several attempts have been made to connect innovation activities to firm performance measurements with the hope of providing a "one size fits all" for how to do innovation. Enormous amounts of money are invested each year into firm innovation portfolios. Still, previous research has struggled with finding consistency in the relation between innovation and firm performance. Researchers within the field agree that the relationship between innovation and firm performance should be considered vital for firms and industries but that it needs to be viewed as individual and highly dependent on each firm's or industry's contextual factors. The aim of this thesis is to investigate the Swedish retail industry and the relationship between innovation and firm performance.

Purpose. By investigating the Swedish retail industry, the aim of the thesis is to provide guidelines for which innovation categories that drive firm performance in the Swedish retail industry. Our hope is that these guidelines will help innovation managers and decision makers when selecting where to direct innovation investments, as well as when selecting metrics for innovation activities and firm performance. Furthermore this thesis aims to extend the academic knowledge within the area of innovation- and performance measurement.

Methodology. A narrative literature review was conducted during the first phase of the thesis work to gain knowledge regarding innovation, innovation activities, innovation measurements, and performance measurement. A model for testing innovation and its relationship to the performance indicator stock price was created. Quantitative data collection followed, using both secondary data for the model's control variables and dependent variable, as well as a content analysis of annual reports for the collection of data for the independent variables. Generalised least square regressions were performed to produce results from the data collection, which later on were analysed and discussed.

Conclusion. Being the growing and competitive business that the Swedish retail industry is, the ability to measure and manage innovation has become extremely important. To meet this challenge, innovation managers would benefit from increased knowledge regarding the connection between different innovation activities and firm performance. By testing different commonly pursued innovation categories towards the performance indicator stock price, we can conclude that innovation does have a significant and positive impact on firm performance. This relationship is found especially true in regards to product innovation. Thus we can provide implications for investment managers and decision makers within the Swedish retail industry regarding where to direct innovation focus and investments to increase firm value.

Key words and phrases. Innovation, Innovation management, Innovation measurement, Performance, Performance indicators, Performance measurement, Retail industry, Stock price, Generalised least square regression.

Preface

During the research process we have gained significant knowledge both regarding the subjects under study as well as methods for collecting and interpreting data. Working with the thesis has let us dig substantially deeper into the subject of innovation at the same time as being able to explore and use research methods that were new to us. This has been a very rewarding process.

We would like to thank our supervisor Johan Brink for the knowledge provided and for challenging discussions when we have been stuck with a problem. We also thank Evangelos Bourelos for valuable insights during the process of testing the data and performing the regression analysis. We are sorry to have kept you at your office after hours; your help was greatly appreciated. Also we would like to thank Hans Jeppson for providing us with expertise knowledge regarding financial research methods, your insights really helped us kick-start the thesis. Finally, we direct a big thank you to Martin Stenelo, you know why…

"In God we trust, all others must bring data" (Lord William Thomas Kelvin, Professor of Natural Philosophy in the University of Glasgow 1846-1899)

Gothenburg, June 2015

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Innovation activity and stock price effects in the retail industry: A Swedish experience

This thesis is submitted to the School of Business, Economics, and Law at Gothenburg University (Vasagatan 1 P.O. Box 600 SE-40530 Gothenburg). The thesis is equivalent to 20 weeks of full time studies.

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1. Introduction

This first chapter of the thesis covers the background of the subject. By introducing the innovation concept as well as the industry under study the aim is to provide the reader with an understanding for the problem discussion and the evolved research questions.

1.1 Background

The interest for innovation as a research discipline has increased significantly over the last decades. Both academia and practitioners agree that innovation and innovativeness is no longer just a trend. Innovation is now seen as a crucial aspect and a must, not only to gain competitive advantage but to be able to survive at all. (Brown & Eisenhart, 1995; Weerawardena, O'Cass & Julian, 2006) Ever since innovation became a larger research area the debate regarding the connection between innovation and economic growth has been an on-going discussion (Weerawardena et al, 2006). However, the research topic is broad and the differences between industries and companies make the definition of innovative processes somewhat difficult. Initiatives that are seen as innovative within a certain company or industry might not be novel at all for another firm or industry (Hagedoorn & Cloodt, 2003). Some researchers even state that the only consistency that can be found in the innovation research is that the results are inconsistent. However, the perceived importance of the topic is still agreed upon within the field. (Wolfe, 1994)

With Swedish innovation investments as high as 162 billion SEK during 2012 it is self-evident how important it has become for decision-makers to realise the impact of these investments on the firms' performance. Performance is however a subjective measure and indicators to measure it could for example be; turnover, increased product quality, entrance of new markets and/or increased stock price (SCB, 2012; OECD, 2005; Vega, 2006). The Swedish retail industry is among the top spenders on innovation and keeping in mind the both practical and academic difficulty in distinguishing and measuring innovation activity, we find it very interesting to further explore this industry in terms of these issues.

1.2 The Swedish retail industry

The retail industry includes companies offering consumer goods and services. It is common to divide the industry into the categories; apparel and accessories, fast-moving consumer goods, hardlines and leisure goods, and diversified goods and services. (Deloitte, 2015) The Swedish

retail industry has shown an upward trend in the latest years and forecasts state that we can expect the trend to continue in the same direction. Economic growth in Sweden has outperformed most of the other EU countries between 2010 and 2014. This is also the case for the Swedish retail sales growth. Experts within the field expect the retail sales growth to be 2.6 per cent annually all the way into year 2017. A major contribution to this positive trend is the entry of many international retailers on the Swedish market. In 2012 big players such as Sephora, Apple and Hamley's established themselves on the Swedish market. (Fastighetsnytt, 2013) After the financial crisis in 2008, the Swedish consumer confidence has also shown an increasing trend which further contributes to the positive forecasts for the retail industry (Trading Economics, 2015). With both increasing domestic and international competition on the Swedish retail market, the ability to innovate is a crucial factor to stay "ahead of the game" and to ensure investor interest. (Fastighetsnytt, 2013) Research shows that the Swedish retail industry (selling consumer goods and/or services) is a top-spender on innovation compared to other Swedish industries (SCB, 2012).

1.2.1 Innovation in the retail industry

The retail industry is an ever changing business with many big players pushing the industry forward and forcing its' actors to innovate to be competitive. Despite this, the industry has often been seen as poor at innovation compared to other industries. (Katila & Mang, 2003; Katila & Shane, 2005) One reason for this perception could be that innovation within the industry has mostly been measured using patents and trademarks. The retail industry is under-represented in both these measures. (Sundström & Reynolds, 2014) In EU during 2008, the retail industry was 12 per cent more productive in terms of value added per worker than the manufacturing industry, and it accounted for an added value creation of EUR 432 billion in 2009 (European Commission, 2011). It seems rather paradox, that an industry showing such proof of dynamical characteristics and competition also is a poor innovator (Sundström & Radon, 2014). The paradox can be explained by the fact that the retail industry innovate in a different manner than many other industries do. By being an industry that produces consumer goods as well as consumer services, the characteristic of the industry in relation to innovation is distinct from many traditional industries. (Reynolds, Howard, Cuthbertson & Hristov, 2007; Oxford Institute of Retail Management, 2007) This means that to really capture and measure innovation in the retail industry, one need to apply different methods than for other more traditional industries. Retail innovation can be anything from product and service innovation, process innovation, to either technological or completely non-technological

innovations. Many retail innovations are also open innovations meaning that they co-ordinate product- and process innovations throughout the value chain. (Sundström & Radon, 2014)

During the last couple of years an important change of trends in retail innovation has been that some of the big players (mainly in the US) have developed innovation labs, firms such as Wal-Mart, Home Depot and Amazon. Another change in trends is caused by the increasing e-commerce and the ability for e-commerce businesses to act without holding an inventory of their own, using third-party platforms. The most successful example is the Chinese company Alibaba who is the world's largest e-commerce firm today. (Deloitte, 2015)

Retail innovation might take place both in the front end, meaning that the innovations are directly visual for the customer, as well as in the back end serving to increase for example effectiveness or to reduce costs (European Commission, 2014). Historically, the retail industry has been characterised by producing to a mass market and therefore also applying a "mass-market approach" in its innovative activities. However, this is changing and a greater focus is more frequently placed at increasing the individual customer's experience. This involves categorising the business and attending more to local market needs than before. (IBM, 2007)

1.3 Research objective and problem discussion

Given the diverse and inconsistence results in innovation research, together with the commonly agreed fact that innovation should be managed and measured, there are clear problems in providing a best practice for what types of innovation to pursue, and how to measure the performance it contributes to. On top of this, most research directed towards innovation activity is divided into industry- or service sector categories, which makes it difficult to find empirical evidence for a specific industry. (SCB, 2012)

Innovation in the retail industry spans over both product and service sectors and therefore needs to be seen as different in its characteristics in comparison to other more traditional industries (Reynolds et al, 2007). Innovation overall is seen as a driving force to creating performance. The purpose of this study is therefore to examine innovation activities relationship to performance in the Swedish retail industry as well as discussing the managerial implications that can be drawn from such relations.

RQ1: Does innovation drive firm performance in the Swedish retail industry?

If innovation drives firm performance, it also becomes interesting to dig deeper into what kind of innovation that causes this effect. By investigating industry specific innovation categories we can highlight the impact of specific activities relationships to firm performance and by that suggest where to direct innovation investment.

RQ2: What type of innovation within the Swedish retail industry drives firm performance?

We have also studied whether any of the innovation categories performed is superior to any other category, to increase the chances of being able to draw managerial implications.

RQ3: If any, what type of innovation contributes the most to firm performance in the Swedish retail industry?

1.4 Delimitation

The intention of mapping and testing innovation categories and stock price relations is not to predefine what innovation that should definitely be performed, but rather to contribute by outlining guidelines for practitioners within the Swedish retail industry. This thesis only cover companies listed on the Swedish stock exchange within the categories consumer goods and consumer services. Furthermore the thesis only covers 10 years of data (2004-2013). We are examining a Swedish context and thus we are delimited to draw conclusions about other geographical markets than the Swedish. Furthermore we are only analysing the relationship between innovation and one performance indicator, stock price. We are thus delimited to draw conclusions about the relationship between innovation and other firm performance measures than stock price.

1.5 Disposition

The first chapter provides an overview of the subject under study as well as the purpose and the importance of the study. Chapter two covers the narrative literature review that has been executed in order to gain increased knowledge of the subject and previous research. Chapter three refers to the research questions and the hypotheses formed with a basis in the theoretical evidence. Chapter four explains the methodology for carrying out the research. Here we present the methods used and their strengths and weaknesses. Chapter five shows the

descriptive statistics and the results gained from the GLS regression. In chapter 6, we have analysed and discussed the results in regards to the stated hypotheses. Chapter 7 discusses the academic and managerial implications of our findings. Chapter 8 explains the limitations with the thesis as well as arguments for decisions causing these limitations. In Chapter 9 we present our conclusions, contributions and also suggest further research that could be of interest. Chapter 10 presents a reflection of our personal experiences gained from writing this thesis.

2. Theoretical framework

This chapter cover the areas innovation, innovation management, innovation measurement, and performance measurement. The first part of the chapter, covering innovation, is meant to provide an overview of the subject and a general introduction before digging deeper in to the specifics of its measurements.

2.1 The anatomy of innovation

Many attempts have been made to define and capture the changes in our society in one unified word. A commonly used concept in these contemporary discussions is innovation. Innovation is often discussed both in terms of being a part of economic change, as well as in other aspects of societal change. (Benner, 2005) The concept of innovation is not a new phenomenon; one could even argue that as long as humans have existed, there have been thoughts and actions attempting to make new and better things. However, the research field of innovation has emerged during the last decenniums and since the 1960´s it has become a research field of its own with continuously increased publications and interest from society. (Fagerberg, 2005) Even if the field of innovation is still growing both in terms of scientific content and interest, the definition of innovation is still vague and varying between scientists within the field. Innovation research spans over several different fields and the economic approach, which is the focus for this master thesis, alone include many different theoretical perspectives. (OECD, 2005) In this thesis, we do not attempt to boil down all existing definitions of innovation to find a single common one. This would require a thesis of its own. We solely accept the fact that such a broad field requires multiple definitions to be able to cover and explain as much as possible. The reason why firms innovate can be discussed from many angles, but scientists within the field agree that the most common factor is to improve firm performance. Whether it regards innovations that leads to increased demand or reduced costs, or innovations that lead to improving the firms future ability to innovate, increased performance is the ultimate reason. (OECD, 2005)

As mentioned, innovation as a concept spans over several different fields, even though its emergence can be traced back to mainly science studies or science policy studies. It was in the 1900's that many so called new industries emerged thanks to the fact that innovation went from being an individual activity performed by individual inventors, to a collective activity where researchers and inventors came together in R&D labs. (Freeman & Soete, 1997) As a

natural consequence of the events and growth of the innovation field during this period, two main research streams emerged regarding the concept of innovation. Innovation can therefore be seen as a two-sided activity either based on scientifically shaped inventions (also called science-push innovation), or on market demands (also called market-pull innovation). Even though some researchers stress both sides of the innovation spectra as predominant, it has also been agreed in much of the literature that on a general level of observation, one has to take both factors into account meaning that most innovation activity lies somewhere on the spectrum between the two extremes. (Freeman & Soete, 1997) Following this, many instances have been founded that are today working with innovation both in societal and economic change, and the work is cross-disciplinary. (Fagerberg, 2005)

During the years that the innovation research field has developed, several different models of innovation have been brought forward. One of the most commonly referred models is the five generations of innovation, described by Rothwell (1994). The model describes different stages of the research field's emergence starting with the first generation in the 1950´s to the mid 60´s. This is often referred to as the technology push phase where technology and industrial innovation were believed to be able to solve all great problems. The second generation took place in the mid 1960´s to the early 70´s and in this period the focus started to shift from the scientific advance to a greater focus on the market place, the period is called the need-pull phase. The third generation is reaching into the mid 80's and was largely affected by oil crises and has come to be called the coupling-model where the two earlier generations were combined. (Rothwell, 1994) During this period many researchers, such as Cooper (1980; 1990) with his stage gate process, developed standardised models for how to "take care" of a new idea (Cooper, 1980; 1990). The fourth generation innovation process took place from the early 80's to the early 90's and was affected by many Japanese companies starting to "design for manufacturability" leading to high production levels and lots of product innovations. (Rothwell, 1994)

According to Rothwell (1994) the innovation process has continued to develop and proceeded into the fifth generation innovation process where quality and performance features are more intensively emphasised. Competition has also become a more important factor and time to market is a term that is more present than ever. Being first to market and the trade-off between time and costs is more considered than before. This phase is often called the systems

integration and networking innovation process and focuses on the so called “lean innovation”. (Rothwell, 1994)

2.1.1 Types of innovation

The most fundamental cornerstone of the innovation definition is often to start by explaining the difference between innovation and invention. Usually, an invention is explained as an idea or a concept, while the innovation is explained as an implementation or commercialisation of that same idea. This first step of defining innovation is probably one of the few agreements among scientists when it comes to defining innovation. (Fagerberg, 2005) There are many discussions regarding whether innovations needs to be successful to be called innovations (Trott, 2012). Some definitions states that successful exploitation is a must for an innovation to be called innovation, however, this can also be interpreted as successful by only being brought to the market, and not dependent on how the market success plays out. (Fagerberg, 2005)

One of the first scientists to leave a mark that has influenced the innovation discipline significantly is Joseph Schumpeter (1934). He is most famous for developing the process of creative destruction where he argues that new technologies, in a dynamic process, continuously replaces old ones. Schumpeter (1934) provided a list of five different types of innovations that has been widely accepted and used by many scientists and practitioners after him, to some extent we intend to do so in this thesis as well. (Schumpeter, 1934) The list includes; (1) Introduction of new products, (2) Introduction of new methods of production, (3) Opening of new markets, (4) Development of new sources of supply for raw materials or other inputs, and (5) Creation for new market structures in an industry, also called new ways to organize business. (Schumpeter, 1934) The OECD in their Oslo Manual (2005) where they provide “guidelines for collecting and interpreting innovation data” is only one of few institutions to accept Schumpeter’s (1934) defined innovation types, however they do so with some moderations (OECD, 2005). Many other governmental institutes have also accepted Schumpeter’s (1934) definition and innovation categories, which further enhances the legitimacy of using his theories as a framework for further studies within the field of innovation. (Norwegian Ministry of Trade and Industry, 2008-2009; Regeringskansliet, 2012) For this thesis, the modernised version of Schumpeter’s (1934) definitions developed by the OECD (2005) will be the basis for how innovation and innovation activities are defined. In the Oslo Manual (2005), the list of types of innovations is for exampled altered to better suit

the growing service industry of today, since Schumpeter (1934) only discusses innovation in a manufacturing perspective. The OECD (2005) definitions include the categories; product innovation (including goods and service innovation), process innovation, marketing innovation, and organisational innovation (OECD, 2005).

Following definitions were recovered from the OECD (2005) Oslo Manual.

Product innovation

"A product innovation is the introduction of a good or service that is new or significantly improved with respect to its characteristics or intended uses. This includes significant improvements in technical specifications, components and materials, incorporated software, user friendliness or other functional characteristics… The development of a new use for a product with only minor changes to its technical specifications is a product innovation… Product innovations in services can include significant improvements in how they are provided (for example, in terms of their efficiency or speed), the addition of new functions or characteristics to existing services, or the introduction of entirely new services… Design is an integral part of the development and implementation of product innovations. However, design changes that do not involve a significant change in a product's functional characteristics or intended uses are *not* product innovations." (OECD, 2005 p.48)

Process innovation

"A process innovation is the implementation of a new or significantly improved production or delivery method... Production methods involve the techniques, equipment and software used to produce goods or services…Process innovations include new or significantly improved methods for the creation and provision of services. They can involve significant changes in the equipment and software used in services-oriented firms or in the procedures or techniques that are employed to deliver services... Process innovations also cover new or significantly improved techniques, equipment and software in ancillary support activities, such as purchasing, accounting, computing and maintenance. The implementation of new or significantly improved information and communication technology (ICT) is a process innovation if it is intended to improve the efficiency and/or quality of an ancillary support activity." (OECD, 2005 p.49)

Marketing innovation

"A marketing innovation is the implementation of a new marketing method involving significant changes in product design or packaging, product placement, product promotion or pricing… Marketing innovations are aimed at better addressing customer needs, opening up new markets, or newly positioning a firm's product on the market, with the objective of increasing the firm's sales. The distinguishing feature of a marketing innovation compared to other changes in a firm's marketing instruments is the implementation of a marketing method not previously used by the firm. It must be part of a new marketing concept or strategy that represents a significant departure from the firm's existing marketing methods. The new marketing method can either be developed by the innovating firm or adopted from other firms or organisations. New marketing methods can be implemented for both new and existing products… Marketing innovations include significant changes in product design that are part of a new marketing concept. Product design changes here refer to changes in product form and appearance that do not alter the product's functional or user characteristics. They also include changes in the packaging of products such as foods, beverages and detergents, where packaging is the main determinant of the product's appearance… New marketing methods in product placement primarily involve the introduction of new sales channels. Sales channels here refer to the methods used to sell goods and services to customers, and not logistics methods (transport, storing and handling of products) which deal mainly with efficiency… New marketing methods in product promotion involve the use of new concepts for promoting a firm's goods and services… Innovations in pricing involve the use of new pricing strategies to market the firm's goods or services." (OECD, 2005 p.49-51)

Organisational innovation

"An organisational innovation is the implementation of a new organisational method in the firm's business practices, workplace organisation or external relations... The distinguishing features of an organisational innovation compared to other organisational changes in a firm is the implementation of an organisational method (in business practices, workplace organisation or external relations) that has not been used before in the firm and is the result of strategic decisions taken by management… Organisational innovations in business practices involve the implementation of new methods for organising routines and procedures for the conduct of work… New organisational methods in a firm's external relations involve the implementation of new ways of organising relations with other firms or public institutions,

such as the establishment of new types of collaborations with research organisations or customers, new methods of integration with suppliers, and the outsourcing or subcontracting for the first time of business activities in production, procuring, distribution, recruiting and ancillary services… Mergers with, or the acquisition of, other firms are not considered organisational innovations, even if a firm merges with or acquires other firms for the first time. Mergers and acquisitions may involve organizational innovations, however, if the firm develops or adopts new organization methods in the course of the merger or acquisition." (OECD, 2005 p.51-52)

2.1.2 Degree of newness

Besides examining what different types of innovations there are, there is also a need to discuss what innovation is, and for whom. According to the OECD (2005) definitions in the Oslo Manual, all innovations need be novel to some extent (OECD, 2005). However, the problem follows that what is novel for one firm might not be so for another firm. OECD (2005) has, to tackle this problem, provided a definition of newness that is graded in three different levels of differentiation. Firstly the innovation need to be new to the firm to be considered novel, this is the minimum level of entry to be called an innovation. On the next level, the innovation need to be new to the market, and thirdly, new to the world. (OECD, 2005) Different researchers and authors have different opinions regarding how strict the requirements for novelty should be. For this thesis, the minimum level of newness definition provided by the OECD (2005) is the most suitable for generalisability purposes and for the purpose of the thesis.

2.1.3 Innovation and economic development

Schumpeter (1934) in his work *The theory of economic development* strongly highlights the connection between innovation and economic development, or economic growth. He states that economic development is created through the discontinuous emergence of combinations that are new (innovations) and more viable economically than the older combinations, meaning the older way of doing things. Innovations drives development and development drive profits. If there are no profits, there can be no further development. With this as his basis, Schumpeter (1934) labelled the five innovation categories stated earlier in the chapter. Schumpeter (1934) does not only highlight the emergence and anatomy of the innovation concept, but also stresses the importance of direction of resources as a main factor for the

ability to create these new combinations (innovations). In a competitive economy, those who are in charge of resources are phasing two main questions. They can choose to direct resources towards the creation of new combinations, or they can choose to direct them towards existing combinations. (Schumpeter, 1934) In this contemporary society, it has become evident that the economy is so competitive, that to strive for continuous development is necessary for company survival. Innovation and the work of finding new combinations (being innovative) have earned its place in most companies' competitive portfolio. (Brown & Eisenhart, 1995) A natural consequence becomes that innovation and the activities related to it, needs to be organised and managed. (Burns & Stalker, 1961)

2.2 Innovation management

Innovation management has been studied from a national perspective, a firm perspective and from a project specific perspective. Furthermore studies have been divided between different sectors, industries, and countries. (Dodgson, Gann & Phillips, 2013) In this thesis we focus on innovation management from a firm perspective.

Uncertainty has been a commonly used keyword in the innovation literature during the last decades. Researchers and scientists agree that innovation decisions in firms take place under highly uncertain conditions. The state of uncertainty is among other things a result of incomplete information and lack of consistent values. Being the transformational process that it is, innovation challenges the rational models of management. It is said that innovation requires intuition rather than planning. There is a lack of knowledge regarding the effectiveness of the management that is used to support innovation and this makes innovation management risky and uncertain. (Jalonen, 2012) The situation of innovation management is sometimes referred to as- being in charge, but not in control (Shaw, 2002). Some researchers state that to create an environment that fosters innovation it is the manager's responsibility to design for failure even though this further increases the uncertainty of the activities. The trial and error attitude that welcomes failure as a learning process is said to make innovation flourish. (Burns & Stalker, 1961) What can be understood from the literature of innovation management is that the managers' carry plenty of responsibility and even though there are existing models of innovation, there is rarely a best practice for managers to apply. Their intuition and experimental ability is far more important. (Benner, 2005)

We do not aim to cover all literature regarding innovation management, but rather to conclude that a best practice for how to manage innovation processes is not agreed on within the field. What is agreed is that management need to be daring, not scared of risk and uncertainty, as well as being able to organise their business to a trial and error organisation where continuous change is the normal condition. (Burns & Stalker, 1961) To improve the ability to manage innovation and to rely less on intuition and more on planning, different measurement methods for innovation is often used. However, measuring innovation is a complex activity. By increasing the ability to measure innovation and the result that innovative activities bring, researchers hope to learn what innovation to focus on, as well as how to manage innovation processes to increase results. (Cordero, 1990)

2.3 Innovation measurement

As is already made clear, researchers within the innovation field agree that innovation should be considered vital for each company's competitive portfolio (Brown & Eisenhart, 1995). Innovation is also agreed to be a major contributor to economic growth as well as to societal development (Schumpeter, 1934). Despite these facts, companies worldwide struggle to measure the phenomena of innovation and innovativeness, as well as the performance it contributes to (Innovation Metrics, 2009). In their senior management survey *Measuring Innovation 2008; Squandered Opportunities* the Boston Consulting Group (2008) recognised that only 43 percentage of the respondents were satisfied with their innovation investments results and paybacks (Boston Consulting Group, 2008). The report states that "Companies undermeasure, measure the wrong things, or, in some cases, don't measure at all, because they are under the mistaken impression that innovation is somehow different from other business processes and can't or shouldn't be measured. The potential cost of this error – in terms of poorly allocated resources, squandered opportunities, and bad decision making generally – is substantial" (Boston Consulting Group, 2008 p.6)

Similar to the BCG report (2008), The McKinsey Global Report (2008) *Assessing Innovation Metrics* discovered that only 16 per cent of the respondent companies used any metrics at all to assess innovation. Those that were measuring used approximately eight metrics or less, while in the BCG report (2008) companies reported they were using five or less. The McKinsey Global Report (2008) highlights that those companies reporting the highest growth contribution are those who view innovation measurements as a portfolio activity. By doing so, they tend to apply more metrics that range across the whole innovation process. Both reports

agree that the companies that are the most successful both when it comes to growth contribution and to innovation measurements are those who use more and better metrics and those who view innovation as a process. (McKinsey, 2008; Boston Consulting Group, 2008) The most successful firms are not only measuring outputs, which is fairly common to do otherwise, they also measure inputs or resources (Boston Consulting Group, 2008). Examples of specific measures that these firms use are; number of people that are actively devoted to innovation activities, the amount of new ideas that are sourced from somewhere outside of the organisation, and the percentage of innovations that met the company's predetermined development schedule. The most successful firms also measure returns from innovation activity on a general level, as well as measuring customer satisfaction on each specific level of innovation. (McKinsey, 2008)

There have been several attempts trying to combine the different models provided for innovation metrics to find a best practice for managers to use. However, the industry agrees that it is too complex and too firm and industry specific to be able to provide anything else than guidelines. (Adams, Bessant & Phelps, 2006) Managers dealing with innovation metrics therefore have to navigate among many different theories and try to find a method that suits their specific industry and firm. This is probably why survey results show that very few per cent of respondents are measuring innovation, and amongst those who do, there is much uncertainty and un-clarity in the effectiveness of such activities. (Dodgson & Hinze, 2000; Hagedoorn & Cloodt, 2003; Carayannis & Provance, 2008)

2.4 Performance measurement

When reviewing research on the subjects' innovation and measurement of innovation, one undoubtedly also needs to study performance measurements. As mentioned, the main reason for performing innovative activities is to increase the performance of the firm. (OECD, 2005) Innovation activities and firm performance are closely connected to innovation management, since knowing what, how, and when to innovate and measure also opens up for managers to make more accurate decisions. (Eccles, 1991)

2.4.1 A change in trends

In performance measurement research, there is one main trend that can be detected. Executives within several different industries have started to rethink how they measure performance. New competitive conditions and strategies have demanded new systems for

performance measurements. (Eccles, 1991; Atkinson, Waterhouse & Wells, 1997) The traditional way has been to use formal measurements building on the financial reporting system of the company. The reason for doing so is because these systems provide measures that are considered to be consistent and reliable. Financial report systems are also argued to give a solid foundation for creating accountability and reward structures. Using financial measurements has been convenient to many of its proponents since it goes well in line with the objective of profit creation for owners and therefore the usage of financial reporting systems becomes consistent with the overall objectives of the firm. (Atkinson et al, 1997)

Critique against using financial reporting systems mainly builds on the fact that it lacks variety and therefore cannot provide managers with the wide range of information that is needed to manage a whole process. Some major complaints are that financial report systems are missing factors like customer satisfaction and that the numbers are based on past activities meaning that it gives no implication for the future. It also lacks effectiveness when it comes to evaluate processes efficiency and effectiveness. (Atkinson et al, 1997) One of the most acknowledged critiques to using financial report systems is provided by the creators of the Balanced Scorecard, Kaplan and Johnson (1987) who, in their book *Relevance lost* (1987) widely critique the usage of financial report systems and instead provide a method for controlling the organisation by including customer satisfaction, market shares, learning and development, innovation intensity, internal processes such as lead-time, and employee development. (Kaplan & Johnson, 1987; Kaplan & Norton, 1996) Furthermore, financial reporting systems have received critique because it does not capture the intellectual capital of the firm. Intellectual capital affects the development of the modern economy and whether viewed from a management or innovation perspective there is much support that intellectual capital should be considered vital when determining enterprise value and firm performance. (Petty & Guthrie, 2000)

2.4.2 Performance indicators

Performance indicators identifies the results of the organisations activities. There are three main groups of indicators used to measure performance; (1) Output indicators (short term), (2) Outcome indicators (long term), and (3) Impact indicators (sustained advantage). Indicators of the first group present the short term success of the firm, in regards of measuring performance related to innovation activities. This group of indicators often cover patent numbers and rates, quotes, number of new products etc. Indicators of the second group

present the long term success and can for example be measured in long term profit margins or market shares, growth rates and/or dominant designs or technological standards that have been shaped by the innovations. The third group of indicators measure impact and indicates the sustainable advantage that the firm has gained from the result of innovations and can for example be measured in status and reputation for being innovative. (Carayannis & Provance, 2008)

Performance measurement has been given a greater focus on a project-level basis than on a firm level. This is due to the fact that processes are easier to capture and understand, and therefore also measure on a project basis rather than on an organisational level. The difficulty of measuring overall firm performance has led to an absence of a generally accepted indicator or common set of indicators on the organisational measurement level. There are however still researchers continuously attempting to provide such guidelines. (Carayannis & Provance, 2008) Ultimately, a performance measurement system or indicator should provide both future and past information and include both internal and external stakeholder demands. It should also capture both financial and non-financial parameters which influences both short and long term performance of the firm. Finally the system should cover both hard and soft facts as well as support continuous improvement. (Schentler, Lindner & Gleich, 2010) As explained earlier, all these parameters might be hard to capture with only one performance indicator. Therefore there have been an increased usage of multiple performance indicators and indicators connected to different division and processes throughout the firm. (Coombs, 1996)

It is quite common among firms to use innovation sales rate as a performance indicator of innovation. The indicator shows the percentage of total sales that can be assigned to sales of new products. This is a widely used indicator but it is also self-explanatory that it does not suit all industries. (Innovation Management, 2015) Profit is another performance indicator that companies use to measure overall performance. Cordero (1990) states that innovation should be measured both regarding input/resources (expenses) and outputs (revenues) and since profit is the difference between the two, the author is a proponent to such indicator. To measure profitability the author suggests different approaches such as; present value, rate of return and pay-out period. (Cordero, 1990) The OECD in their Oslo Manual (2005) where they provide guidelines for collecting and interpreting innovation data, uses turnover as the performance indicator, however this indicator can be critiqued by building on historical data and not taking expectations of possible future performance into account. (OECD, 2005;

Schentler et al, 2010) In studies of the financial market, stock price is a commonly used performance indicator since the financial market is believed to be of efficient character (ultimate competition) and adjusts the stock price according to all available information, therefore displaying a good measurement of the firm's value and its performance. (Vega, 2006; Bacidore, Boquist, Milbourn & Thakor, 1997)

There are many studies proclaiming that using a single input or output indicator to measure the innovative performance is enough. However, this is widely critiqued and the overall agreement within the research field is now more directed towards an understanding of the need of using multiple indicators, this especially applies for input indicators. (Coombs, 1996) This is mainly based on critique regarding some input indicators not measuring or capturing efficiency of processes, that single indicator usage does not capture economic or qualitative value, and that there is a lack of technological complexity in the inputs. When it comes to output indicators, there is also a common understanding of the benefits of using multiple indicators. (Santarelli & Piergiovanni, 1996) If for example only using patents as an output indicator there is the problem of some technological level and economic value being heterogeneous, as well as the problem of not all patents becoming innovations and that the propensity of patenting varies across firms. There are also several industry-specific problems with output indicators. Comparison can become problematic due to the specifics of the indicators depending on the industry analysed. (Carayannis & Provance, 2008; Damanpour, 1991; Hagedoorn & Cloodt, 2003)

3. Hypotheses

Chapter 1 and 2 provides initial knowledge both regarding industry and theory. With a basis in those chapters, chapter 3 aims to cover the hypotheses that have derived from that knowledge. The chapter covers both general and specific research questions as well as hypotheses and discussions.

3.1 Research questions and hypotheses

The narrative literature review shows that the broad research field of innovation has commonly agreed that innovation is of vital importance to firm performance. At the same time, the literature review also shows that there are several issues when it comes to defining, measuring and managing innovation.

Researchers agree that innovation should occur and be measured, but that there is no one size fits all recipe for how it should be done. Industries and companies are too complex and have individual characteristics and contexts that make general managerial implications too vague. With the aim of this thesis being to investigate the relation between innovation activity and firm performance within the Swedish retail industry, the first question that we ask is whether the theoretically agreed importance of innovation to firm performance also applies to this specific industry.

RQ1: Does innovation drive firm performance in the Swedish retail industry?

With the evidence found in the narrative literature review, we believe this to be true. The first hypothesis therefore implicates a positive relationship between innovation and firm performance within the Swedish retail industry.

H1: Innovation has a positive effect on firm performance in the Swedish retail industry.

Believing that our first hypothesis is true, the next step becomes to investigate what kind of innovation that causes this positive effect on firm performance.

RQ2: What type of innovation within the Swedish retail industry drives firm performance?

We are not able to test all kinds of innovation activity, in regards to data accessibility and time limitation. We have chosen commonly used definitions of innovation activity, with a

basis in Schumpeter's (1934) theory and modified by the OECD (2005) in their Oslo Manual to narrow the investigation and capture the most commonly conducted innovations, regardless of industry. (Schumpeter, 1934; OECD, 2005) The selected innovation activities to study are; product innovation (covering both goods and services), process innovation, marketing innovation, and organisational innovation. For definitions of innovation activities, see section 2.1.1. According to the Oslo Manual by OECD (2005), these are the most common innovation activities regardless of industry, and since we believe innovation to have a positive effect on firm performance within the Swedish retail industry, we also believe all these innovation activities to have a positive effect on firm performance.

H2a: Product innovation has a positive effect on firm performance in the Swedish retail industry.

H2b: Process innovation has a positive effect on firm performance in the Swedish retail industry.

H2c: Marketing innovation has a positive effect on firm performance in the Swedish retail industry.

H2d: Organisational innovation has a positive effect on firm performance in the Swedish retail industry.

The initial aim of the thesis is to be able to contribute to literature and practice with managerial implications regarding where to direct innovation investment within the Swedish retail industry. To be able to do this without providing too broad or vague implications, we also aim to test whether any of the innovation categories are more superior in regards to positively contributing to firm performance.

RQ3: If any, what type of innovation contributes the most to firm performance in the Swedish retail industry?

H3a: Product innovation impact firm performance positively, to a greater extent than the other types of innovation, in the Swedish retail industry.

H3b: Process innovation impact firm performance positively, to a greater extent than the other types of innovation, in the Swedish retail industry.

H3c: Marketing innovation impact firm performance positively, to a greater extent than the other types of innovation, in the Swedish retail industry.

H3d: Organisational innovation impact firm performance positively, to a greater extent than the other types of innovation, in the Swedish retail industry.

4. Methodology

The aim of this chapter is to describe and explain the chosen method for the study, as well as how to ensure its trustworthiness, covering both the theoretical and empirical approach.

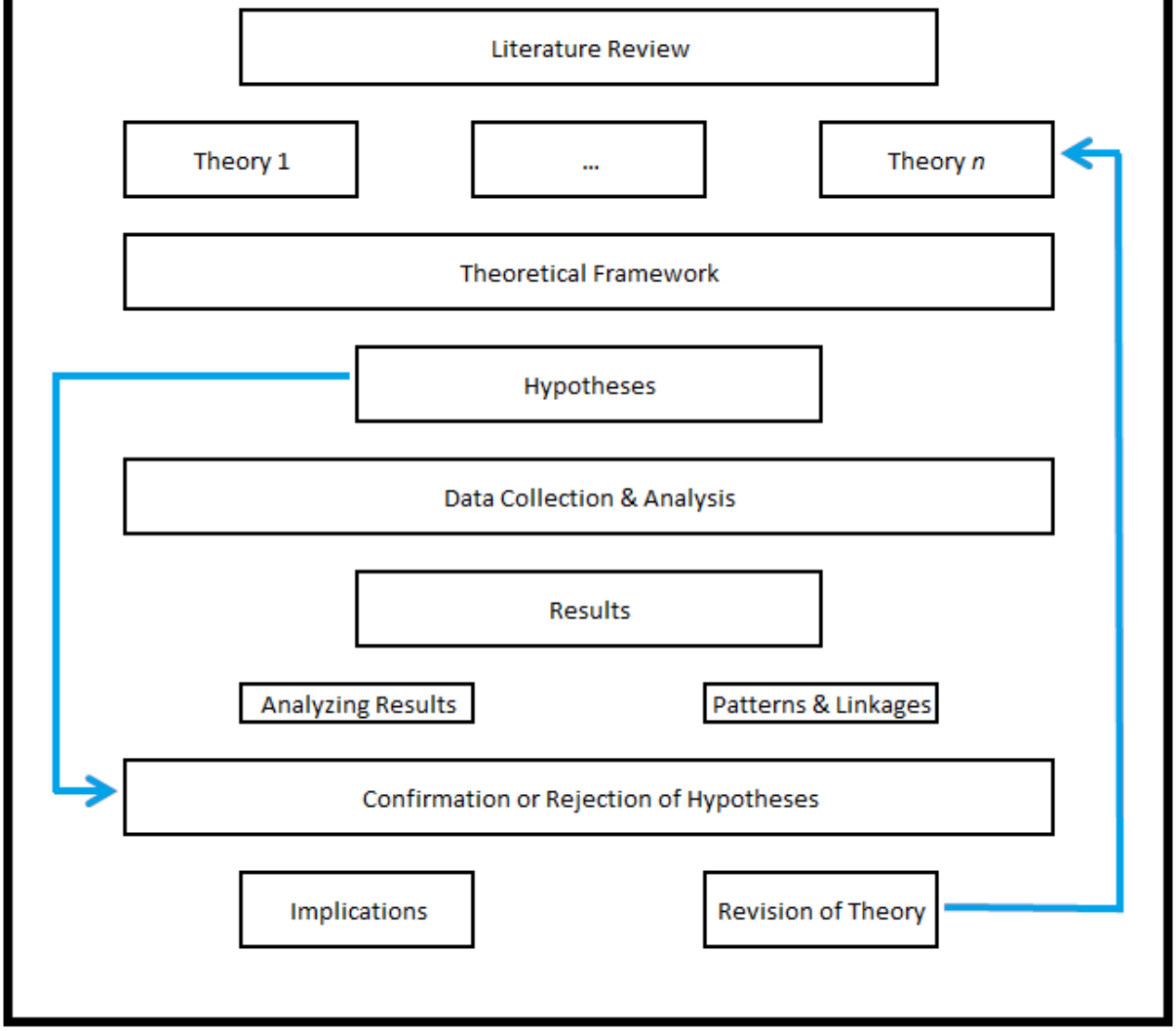
4.1 Research strategy

The methodology aims to be a description of how the research questions was answered and how the stated hypotheses were tested. In this thesis we apply a quantitative method where quantitative data has been collected and analysed. As in most cases with quantitative research, the method is deductive, meaning that it takes its beginning in a literature review aimed to discover and explore theory, to then develop hypotheses based on the theoretical findings. The epistemological considerations are approached with a positivistic view, meaning that we believe that the research role is to test theories and by that contribute with material for development of new laws. (Bryman & Bell, 2011)

After hypotheses were formulated they were tested using generalised least square (GLS) regression, with the purpose to reject or support the stated hypotheses. (Bryman & Bell, 2011) The main data consists of performing a content analysis on annual reports. From the data analysis we are able to show results and make implications and recommendations useful for innovation managers within the Swedish retail industry. See figure 1 for the proposed research approach.

Figure 1.

Proposed research approach



4.2 Theoretical approach

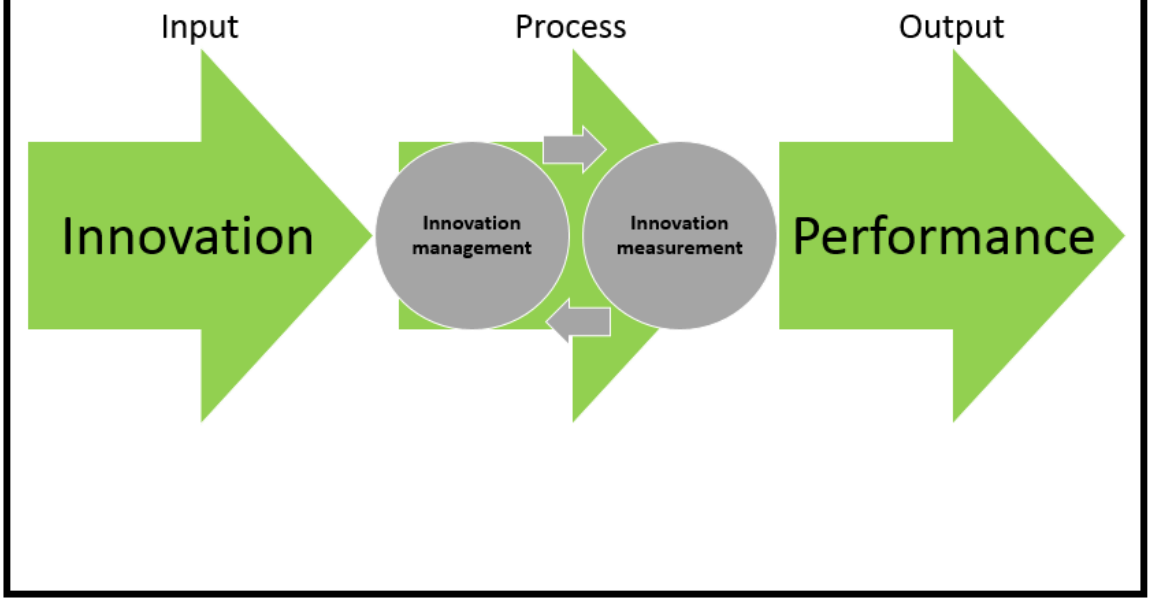
In line with the purpose of the thesis, our goal with the literature review is to evaluate theory, not to provide a brand new theoretical perspective (Baumeister & Leary, 1997). The most common types of literature reviews are the narrative review, the qualitative systematic review, and the quantitative systematic review (meta-analysis). The narrative literature review is useful when the aim is to link many studies together on several different topics. It is suitable whether the aim is to interconnect these resources or to reinterpret them. (Baumeister & Leary, 1997; Bryman & Bell, 2011) Furthermore, narrative reviews are especially useful when the aim is to present a broad perspective topic in a more narrow and readable format

(Green, Johnson & Adams, 2001). Since innovation and performance are such broad disciplines with vague definitions, we found the narrative approach the most suitable.

The narrative literature review took its starting point in classic innovation literature such as the Oxford handbook of innovation and Joseph Schumpeter's work (Fagerberg, 2005; Schumpeter, 1934). By beginning with literature that very broadly approaches the subject of innovation we were able to gain some basic knowledge before digging deeper into the subject. The narrative review led to the formulation of a theoretical framework where the starting point was innovation literature. Within the subject of innovation sub-categories emerged such as innovation management and innovation measurement. Within these emerged categories we conducted in-depth narrative literature reviews to create a deeper understanding. We also wanted to discover the existing performance literature to investigate the connection between innovation and performance. The content of the narrative review resulted in a theoretical framework where innovation can be seen as the input and foundation of the review. The management and measurement of innovation are processes that aims to lead to performance output. See figure 2 for theoretical framework.

Figure 2.

Theoretical framework



4.3 Empirical approach

After having elaborated with theory and formulated hypotheses based on the knowledge gained from the narrative literature review, the next step was to begin the empirical research. The rest of this chapter is dedicated to explain the different empirical methods used for collection and analysis of data.

4.3.1 Study selection criteria

By choosing to study the Swedish retail industry's innovation activity in relation to stock price the population is already narrowed. The population refers to the total set of possible observations (Bryman & Bell, 2011). In our case this means all companies listed on the Swedish exchange that falls under the category "retail industry", on the Swedish exchange called "consumer goods" and "consumer services" implying that our definition of the Swedish retail industry consist of firms selling goods and/or services to consumers. This population consists of 51 companies that were listed on the stock exchange in February 1st 2015. For a list of companies see appendix 1. The sample refers to the part of the population that is selected to be studied, in our case we applied a sample as big as the population, referred to as a census sample (Bryman & Bell, 2011). When beginning to study the sample companies we soon realised that we would be unable to find accurate data from 10 years' time for all 51 firms, which was the initial goal. Even though annual reports existed, we had problems covering the dependent variable stock price and control variables such as firm beta and book to market ratio. Not all firms had been listed during all 10 years and some of them had not reported their financial data consequently. This led to the problem of missing data, see appendix 1. We have approached the missing data with the technique of partial deletion, meaning reducing the data set until it has no missing values. The method used was list-wise deletion where we have removed the whole year's dataset if the specific company had any missing values during that specific year. The problem of list-wise deletion is that it lowers the statistical power of the data set when it reduces the sample size. (Allison, 2001) We started out with 51 companies with the aim to study 10 years of observations. During each of these years, we intended to make observations on each of the selected variables included in the regression model. After the list-wise deletion we were left with 30 companies and 252 observations. Even if the observable sample has become smaller, 30 out of 51 possible firms to observe still accounts for a final sample that is 59 per cent of the census sample, which is considered high (Blumberg, Cooper & Schindler, 2008). Different firms in the retail industry

have shown a consistent heterogeneity in terms of innovation strategies and is therefore comparable in our study (Pantano, 2014).

4.3.2 Data collection techniques

For the data collection, several different sources and techniques have been used. The independent variables, the innovation categories, have been collected through a content analysis of annual reports, which will be described further in section 4.3.4. The control variables have been collected from statistical sources such as financial databases and firm home pages. In the section 4.3.9 each variables data source is described.

4.3.3 Secondary data

In this thesis the empirical research begun with collecting secondary data from published sources. The advantages of using secondary data is that it is available to the public and therefore a time saving method of data collection, however one need to reassure that the data is reliable and the sources valid (Blumberg et al, 2008). We had no problem with the accessibility of the data even though it was collected from multiple sources which caused some time consuming activities in merging the collected data to one form. By using known sources such as the Orbis financial database we also ensured accurateness of the data collected (Orbis, 2015).

4.3.4 Content analysis

The main part of the quantitative data collection in the thesis was performed through a content analysis of company annual reports. The content analysis is used for capturing the innovation activities performed within the studied companies and its output is used as independent variables in our model and analysis. The content analysis is a methodology applied in many different research fields. It is commonly used in health and other social sciences studies, but also in for example; studies of crisis management, use of power in organisation studies, and studies regarding collaborative work groups. (Levine-Donnerstein & Potter, 1999; Blumberg et al, 2008; Bryman & Bell, 2011) When performing a content analysis, there are two main issues to be aware of, firstly one need to approach and elaborate around the so called “nature of the content” (Levine-Donnerstein & Potter, 1999). The nature of the content refers to the complexity of the material that is being analysed; either the content can be a manifest content or a latent content. Manifest contents are the most simple to analyse and regard observations

mainly on the “surface” of the content. This can for example be the appearance of one or several specific words. (Berelson, 1952) A more complex content is the latent one, where underlying patterns are studied and coded. Some latent contents also bring “coder’s interpretation bias” into light when the patterns discovery depends on how they are interpreted by the coders. This type of latent context is called projective content. (Krippendorff, 1980; Bryman & Bell, 2011)

In our case, we are using definitions of innovation activities formulated in earlier research as a coding schema. We then analyse the content of annual reports by locating actions that relate to these definitions. This means that we are studying a both latent and projective content.

The alternative to being under “interpretation bias” would be to treat the content as a manifest content and use a list of coding rules (what to look for in terms of words etc.) but after trying this with several annual reports we realised that rarely did the reports mention the specific words we were coding after. We read the same annual reports while treating the content as latent and projective, and looked for underlying patterns and described actions that fitted with the definitions used. This gave different results showing that we were “missing” important innovation activity when only searching for words. Therefore followed the decision of coding all annual reports with help from definitions and accept the fact that coder’s interpretation bias to some extent would be present, a decision that also has support in theory (Levine-Donnerstein & Potter, 1999). To test different coding methods before determining which to finally go for is an important part of the Weber eight step coding protocol. The aim is to test and pivot until the most effective and accurate coding process is reached (Bryman & Bell, 2011). See section 4.3.5 for a deeper understanding of how the eight step process was used during the creation of the coding schema.

A part from the nature of the content, the second issue during content analysis is to determine the “role of theory” in the study. Theory can take three main roles in a content analysis; deductive, inductive, or no role at all (Levine-Donnerstein & Potter, 1999). As mentioned earlier, we are using formal scientific theories to develop the coding schema by using theoretical definitions as the basis for the coding schema “rules”. This is an example of a deductive approach of theory in a content analysis.

Quality of content analysis

Reliability and replicability

As a data collection technique, for the content analysis to be reliable it also has to be replicable (Krippendorff, 1980). To ensure the content analysis to be reliable/ replicable, the technique should be systematic and objective and for this to be possible, the coding rules must be explicit and equally applicable to all content that is analysed (Klenke, 2008).

To mitigate the risk of not reaching a replicable analysis, we have performed a measurement of inter-coder reliability. This test was conducted by us reading a sample of annual reports individually to then compare the results and find the level of agreement. We reached a high agreement close to eighty per cent, which according to rules of thumb is considered reliable in theory. (Klenke, 2008) To further ensure reliability and consistency during the coding, even after the agreement test was performed, we continued to individually code each annual report to then compare our coding results to ensure we kept a high degree of agreement. In those cases where there were disagreements, the average point was used.

One of the biggest advantages with using content analysis is that it becomes a very transparent method since the coding schema and procedures used for sampling has to be clearly described for the analysis to even be possible to perform. This makes it possible to replicate the analysis and the high transparency is often used as the argument for content analysis to be seen as an objective method. (Bryman & Bell, 2011)

Validity

When it comes to validity, whether the conclusions of the analysis can be considered integral or not, there has been lots of discussion regarding content analyses. Studying annual reports with the purpose of drawing conclusions regarding organisational phenomena builds on the assumption that annual report text (ART) accurately represents the firm and its management. The main opposition to this method regards that ART is one of the company's main tools for communication with shareholders and that there is lack of objectivity from CEO's when it comes to presenting the company accurately and not over-positively. (Michalisin, 2001)

The research regarding validity in ART assertions is limited and even more so for specific fields, such as innovation. However, in contrast to many other areas, in the case of innovation research ART validity has proven a highly valid method in comparison. (Michalisin, 2001)

One example is Bowman's (1976; 1978) studies regarding whether socially responsible firms mentions social responsibility more in their annual reports than less responsible firms, as well as his similar study regarding the food processing industry and whether the companies most active in international markets also talked more about international activity in their ART's. Both these studies show that validity in ART is highly achievable. (Bowman, 1976; 1978) On top of this, those who argue that ART assertions lack validity are widely critiqued by the argument that they have not really tested validity when reaching this conclusion. (Michalisin, 2001). "They merely compare the financial performance of a sample firm to the attributions made in the ART about the firm's performance" (Michalisin, 2001 p. 153). The studies that have actually tested validity of ART's have on the other hand indicated that reaching validity in ART assertion is highly achievable. (Michalisin, 2001; Bowman, 1976; 1978).

For the development of the coding schema, validity also becomes an issue. To ensure validity, it is always more convenient to use a deductive approach and base the coding schema on existent theories, as is the case for this thesis. To ensure validity, the coding schema needs to be consistent and the different categories clearly defined. The theories being used also needs to clarify what concepts are related, meaning that the coding schema should explain what concepts to look for in the ART analysis even if they are not directly mentioned according to the exact definitions. (Rourke & Anderson, 2004; Bryman & Bell, 2011) In the coding schema we have included both broader definitions of the different innovation activities as well as more specific definitions including examples and concepts related to the broader definition. This ensures validity when helping the coders to interpret the content and relate it to theory in a consistent manner.

Objectivity

Connected to validity of content analysis is also the term objectivity. In this case, we are facing the issue of objectivity both regarding the development of the coding schema, as well as during the interpretation of the content. Objectivity is a reasonable expectation if the studied content is of manifest character, however for latent content complete objectivity is nearly impossible. This does not necessary mean that the analysis is invalid. (Levine-Donnerstein & Potter, 1999) To mitigate the risk of lacking objectivity during the coding we have simultaneously studied all ART's individually and later-on together to compare the results. As mentioned earlier, the transparency of the method also mitigates the risk of not reaching objectivity during the analysis (Bryman & Bell, 2011).

4.3.5 Coding schema

A coding schedule briefly covers the categories of data that is to be collected through the content analysis. The brief coding schedule is often complemented with a coding manual with more specific rules and definitions of the categories (Bryman & Bell, 2011). In our case, the brief definitions of innovation categories could be seen as the coding schedule and the specific definitions as the manual. We have chosen to merge these two into one form that is referred to as the coding schema. The coding schema should include all dimensions and different categories related to each dimension (the innovation category definitions), the codes (numbers) that are to be assigned to each category, the rules and definitions of each category and guidance on what concepts that are related to each other. During the creation of the coding schema, Weber's eight step process was used to ensure that the coding schema developed into an efficient tool for coding. (Bryman & Bell, 2011) See table 1 below.

Table 1. **The Weber protocol**
1. Definition of the recording units (e.g., word, phrase, sentence, paragraph).
2. Definition of the coding categories
3. Test of coding on a sample
4. Assessment of the accuracy and reliability of the coding sample
5. Revision of the coding rules
6. Return to Step 3 until sufficient reliability is achieved
7. Coding of all text
8. Assess the achieved reliability or accuracy

As mentioned in the description of the content analysis we performed step 1 and 2 in the protocol and in step 3 and 4 we realised that the content was too complex to be treated as a manifest content. We then moved on to step 5 and 6, meaning that we revised the coding

schema using broader and more specific definitions of the innovation categories as coding rules. This proved to capture the underlying patterns of the content and with help from such specific definitions based on theory we could assure that the content was interpreted consistently throughout the coding. We then moved on to step 7 with our revised coding schema and coded all ART. In the section 4.3.5 it is accounted for how we have assured reliability and accuracy of the coding (step 8).

The final coding schema for the content analysis can be found in appendix 2a-e and displays the brief and specific definitions used for each independent innovation category. By using specific definitions including examples of such innovation activity that the category concerns, we also ensure that there are no overlap between the different categories and that they are mutually exclusive and exhaustive. Definitions covered in 2.1.1 serves as the basis for the creation of the coding schema.

Coding examples

The following are two examples showing how annual report text has been coded during the coding process by using the developed coding schema.

"In-store "Garment Collecting" makes H&M the first fashion company to offer clothes collection globally. In 2013 customers brought in 3,047 tons of used clothing. Recycled fibers become for example, new jeans" (HM, 2013 p.10). This statement suits the coding schema definitions and rules for *introduction of a new service* (See appendix 2a) and has resulted in one point for this subcategory and thus one point in the main category *product innovation*.

"During 2011, SMPH International continued to test market snus in a selected number of stores in Taiwan and Canada under the *General* brand. In Russia a test launch of snus was initiated under the *Parliament* brand" (Swedish Match, 2011 p.9). The introduction of snus on the Russian market suits the coding schema definitions and rules for *entering a new market* (See appendix 2c) and has resulted in one point for this subcategory and thus one point in the main category *market innovation*.

4.3.6 Panel data

The methods used for collecting data for all variables resulted in a set of panel data. Panel data is referred to as a data set where the different included entities are observed over time.

(Baltagi, 2013) Using panel data brings multiple advantages, for example it gives the researchers a large amount of data points to study. Panel data thus provides a more accurate inference of model parameters and provides a greater capacity for capturing the complexity of entity behaviour than a single cross-section or time series data. To analyse panel data there are two techniques, using fixed and/or random effects. (Hsiao, 2014) These are further elaborated in section 4.3.7.

4.3.7 Multivariate analysis

To test the relationship between studied variables we apply the method of GLS regression. The GLS regression is a suitable method when the variances of the observations are unequal or where there exists any correlation between the observations. In such cases, the most commonly used ordinary least square (OLS) regression has proven to be inefficient and/or misleading, whereas the GLS is a better option. (Hayes & Cai, 2007) Before conducting the GLS we tested for fixed or random effects. The Hausman test performed show that the P-value (prob>chi2) is close to zero, indicating that we cannot reject the null hypothesis (that both random and fixed effects are consistent). Hence we will use random effects since it is both consistent and efficient. (Hausman & Taylor, 1981; Cornwell, 1988; Baltagi & Khanti-Akom, 1990) A significance level of 0,05 is used for the analysis of our results. See table 2 below.

Table 2.

Hausman test

	Coefficients (b) fixed	(B) .	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
productinn~n	.167174	.1488627	.0183113	.0230394
processinn~n	.0589849	.0566858	.0022992	.0265963
marketingi~n	.0588875	.0154412	.0434463	.0229312
organizati~n	-.0423541	-.0078476	-.0345065	.0266596
annualrepo~e	-.0037983	-.0024334	-.0013649	.0014278
consumerpr~x	-6.655949	-6.144536	-.5114124	.7894915
exchangerate	3.223096	4.436523	-1.213427	1.148236
numberofem~s	-4.48e-06	-3.03e-06	-1.45e-06	7.02e-06
firmage	-.0065147	.0000401	-.0065549	.0201743
firmturnover	.0368868	.030433	.0064538	.0081856
booktomark~o	-.4565206	-.2774701	-.1790505	.0570282
gdp	-.4560077	1.52361	-1.979618	1.849646
Year2008	-.579392	-.6656248	.0862328	.0292884

b = consistent under Ho and Ha; obtained from xtreg
B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(11) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 21.38
Prob>chi2 = 0.0296

4.3.8 Multivariate analysis model

The following model is the basis for the GLS regression.

$$\Delta\, \boldsymbol{Stock\ price} = \boldsymbol{\beta_0}$$
$$+\boldsymbol{\beta_1 Firm\ Age}$$
$$+\boldsymbol{\beta_2 \Delta\ Firm\ Turnover}$$
$$+\boldsymbol{\beta_3 Number\ of\ Employees}$$
$$+\boldsymbol{\beta_4 Book\ to\ Market\ Ratio}$$
$$+\boldsymbol{\beta_5 Consumer\ Price\ Index}$$
$$+\boldsymbol{\beta_6 Exchange\ Rate}$$
$$+\boldsymbol{\beta_7 \Delta\ GDP\ Sweden}$$
$$+\boldsymbol{\beta_8 Size\ of\ Annual\ Report}$$
$$+\boldsymbol{\beta_9 Year\ 2008}$$
$$+\boldsymbol{\beta_{10} Product\ Innovation}$$
$$+\boldsymbol{\beta_{11} Process\ Innovation}$$
$$+\boldsymbol{\beta_{12} Marketing\ Innovation}$$
$$+\boldsymbol{\beta_{13} Organisational\ Innovation}$$

4.3.9 Operationalisation of variables

Dependent variable - stock price

As mentioned in theory, there are several different approaches to how to measure performance, what indicators to use, and whether it should be done on a project-level or organisational level. In the case of this master thesis, where access to data as well as time is limited, the most reasonable option is to study one performance indicator. The selection of indicator is therefore naturally attempted to be of such characteristics that it covers as many parameters as possible of those suggested in the theory, see section 2.4.2. Taking into account that there is no perfect performance measurement, we find stock price being a better alternative than other examples mentioned in theory, such as; profit, turnover and innovation sales rate.

The reasoning behind this argument is based on that stock price builds on both historical and current information as well as captures future expectations. It also includes all available information, capturing both hard and soft facts which make it a suitable performance measurement. (Vega, 2006; Bacidore et al, 1997) In innovation research were innovation activity is tested towards other indicators than stock price, there is no argument of such perfect markets. This results in earlier research commonly using a lag of innovation activity on the effect of performance (Segerstrom, 1991; Damanpour & Evan, 1984). In the case of a perfect financial market where there is an immediate adjustment to any information given, the case of lagging innovation is not relevant since we are under the assumption that the perfect financial market is able to adjust and assign a correct value for such lagged innovation effects immediately. (Vega, 2006; Bacidore et al, 1997)

When using stock price as the dependent variable in our regression, it is displayed as the percentage change in stock price compared to the previous year. The data of the stock price has been collected from the Orbis database and Yahoo Finance as a compliment. (Orbis, 2015; Yahoo Finance, 2015)

Independent variables

The independent variables used are the innovation activities following the OECD's definitions in the Oslo Manual. (OECD, 2005) Data is collected through a content analysis from annual reports presented by each firm and year. The independent variable product innovation covers

both goods-and service innovation. The independent variable process innovation covers new production and delivery methods, new ICT, and new ancillary support activities. Marketing innovation includes new design and packaging, new pricing and promotion methods, and entrance to new markets. Organisational innovation includes new conducts of work, new relationships with other firms or public institutions that has led to new innovations, and mergers and/or acquisitions that has led to innovative activities. A more specific description of these sub-categories is presented in the coding schema used during the content analysis, see appendix 2a-d. The points given to each sub-category has then been counted to a total point for each main category of innovation activity, see appendix 2e.

To test for the first hypothesis, whether innovation has a positive effect on performance we wanted to group the independent variables; product innovation, process innovation, marketing innovation and organisational innovation into one variable called innovation. High correlations between the independent variables show that they are closely related and acceptable to test as a group. To strengthen the use of innovation as one grouped variable we performed a Cronbach's alpha test, which is a measure of internal consistency between the four independent variables. The scale reliability coefficient of 0,6798 indicates that variable innovation is "acceptable" as an indicator of the four independent innovation variables. (Truglia, 2009) See table 3 for correlations and Cronbach's alpha test.

Table 3.

Innovation categories correlation and Cronbach's alpha test

```
. corr  productinnovation processinnovation marketinginnovation organizationalinnovation
(obs=252)

             | produc~n proces~n market~n organi~n
-------------+------------------------------------
productinn~n |   1.0000
processinn~n |   0.3996   1.0000
marketingi~n |   0.3031   0.2763   1.0000
organizati~n |   0.4037   0.3689   0.3510   1.0000


. alpha productinnovation processinnovation marketinginnovation organizationalinnovation

Test scale = mean(unstandardized items)

Average interitem covariance:     .3162245
Number of items in the scale:            4
Scale reliability coefficient:      0.6798
```

Developing a systematic measurement scale

When performing the content analysis, each sub-category of innovation described above has been accounted for and given points depending on how many times it has been mentioned in the annual report. This means that the number of points given has not had a maximum limit, however we could see that nearly any company was ever mentioning an innovation category more than 20 times. The points given to the sub-categories then results in a total number of points for each innovation activity. To be able to perform a regression analysis the points needs to be converted into a scale where the distance between each number is the same. This scale needs to, as accurately as possible, reflect the reality of how much innovation each firm has conducted during the year. (Cohen & Cohen, 2010) We have created an interval of five steps that we argue have the same distance between them. Zero represents very low innovation activity, one represents low, two represents moderate, three represents high, and four represents very high innovation activity. As shown in table 4, we argue that the effect of one additional observation decreases as the total number of observations increases. So the higher the initial score, the broader becomes the interval range connected to each final score on the scale. Therefore observations of zero and one gets zero points, while for example observations between nine and thirteen get three points on the final scale.

Table 4.
Systematic measurement scale

# Times mentioned in AR	Score in the systematic measurement scale	
0	0	Very low innovation activity
1		
2	1	Low innovation activity
3		
4		
5	2	Moderate innovation activity
6		
7		
8		
9	3	High innovation activity
10		
11		
12		
13		
≥14	4	Very high innovation activity

Control variables

Control variables are held constant to exclude their impact on the phenomena which lets us analyse the relationship between the other variables in the model without interference from the controlled variables. (Lavenberg & Welch, 1981; Jaccard & Turrisi, 2003)

Firm age – Firm age describes the age of the firm for each occasion of measurement in the analysis. In theory, many researchers argue that there is a relationship between firm age and innovation activity. (Balasubramanian & Lee, 2008; Hansen, 1992) With theory providing evidence of such relationship, it becomes important for us to include firm age as a control variable to be able to isolate, so that it does not interfere with our analysis. This data has been collected through the Orbis database. (Orbis, 2015)

Δ Firm turnover – The control variable Δ Firm Turnover describes the change in turnover from last year and is calculated as the change between turnover year 2 and year 1, divided by turnover year 1, thus giving the percentage change in turnover between the years. In studies where innovation inputs/activities are measured, turnover is often the output measure (OECD, 2005). As an output measure, either total firm turnover, or the part of turnover that can be specifically related to a certain innovation activity is used (Hollanders & Esser, 2007; Mastrogianis, 2003). Theoretical evidence proofs that firm turnover impact stock prices and is therefore a variable that needs to be isolated (Ying, 1966). This data has been collected through the Datastream database. (Datastream, 2015)

Number of employees – The number of employees, also referred in research as the size of the firm, is theoretically proved to be affecting innovation activity and vice versa (Herrera & Sánchez-González, 2013; Hansen, 1992; Brouwer, 1993). Already during the early emergence of the innovation research field, one can find statements regarding how the size of the firm affects how innovation is created and carried out (Schumpeter, 1934). To be able to isolate this relationship, we have included the number of employees each year of observations as a control variable. This data has been collected through the Datastream database. (Datastream, 2015)

Book to market ratio - The control variable book to market ratio is calculated as the firms book value per share divided with the firm's market price per share. The value of the ratio, higher or lower than 1, tells whether the stock is over- or undervalued. (Birgham & Ehrhardt,

2013) Whether investor's sees the stock as over- or undervalued affects the stock price and therefore the book to market ratio needs to be isolated from the regression. This data has been collected through the Orbis database. (Orbis, 2015)

Consumer price index – Consumer price index is used as an indicator for inflation which in prior studies have been found to have a significant effect on stock prices (Quayes & Jamal, 2008; Walter, 2006). The measure reflects the rate of changes in consumption goods and services (International Monetary Fund, 2004). We have used data on an annual basis that has been collected from Statistics Sweden. (SCBa, 2015)

Exchange rate - The control variable exchange rate has been calculated SEK/Euro on an annual basis through the formula; change in exchange rate between year 2 and year 1, divided by exchange rate year 1, giving the percentage change in exchange rate between the years. The reason for using SEK/Euro is because the Swedish export to countries using the Euro currency accounts for 75 per cent of total Swedish exports (SCBb, 2015). Exchange rate is theoretically proven to have an impact on stock prices and therefore needs to be included as a control variable in the model to isolate this effect in our analysis (Nydahl, 1999; Richards, Simpson & Evans, 2009). The data has been collected from the Statistical Data Warehouse of the European Central Bank. (ECB, 2015)

Δ **Gdp Sweden –** Annual Gdp changes have been used as a control variable with prior studies showing both significant positive and negative relationships between Gdp and stock prices (Dimson, Marsh & Staunton, 2002; Fama, 1981). The change in Gdp is calculated by the difference between Gdp year 2 and year 1, divided by Gdp year 1, thus giving the percentage change in Gdp annually. The data has been collected from The World Bank. (World Bank, 2015)

Size of annual report – Size of annual report was included in the model to control for the number of pages in the annual reports used in the content analysis. Longer annual reports would suggest more space to conclude yearly innovation activities. The data on number of pages has been collected from each studied annual report during the content analysis.

Year 2008 – To isolate the effect of extreme external events we have introduced a dummy variable for the year 2008 where the financial crisis begun as well as lagged the variable with one year to account for delayed effects.

4.3.10 Quality of empirical approach

When conducting empirical research, the ability to prove its trustworthiness is extremely important (Bryman & Bell, 2011). An ideal study should of course be controlled and designed so that no ambiguity occurs, but this is practically impossible, therefore error is always present to some extent (Blumberg et al, 2008). The rest of this section is dedicated to explain how we have reduced risk of errors by ensuring research quality.

Reliability and consistency

Reliability refers to the ability to produce the same results in another point of time. Meaning that under the same measurement conditions, and in respect to time, the measurement instrument should be stable. This also indicates that, when applied to testing, reliability and consistency are much related (Bryman & Bell, 2011). When testing for stability, the same observations are undertaken in a later time period and correlations between the observations are investigated. For the measurement to be of stable character, correlation should be high between the different observations taking place at different points in time. To test for stability requires a great time effort and might not always be reliable since the observations in period 1 might affect observations in period 2. (Bryman & Bell, 2011) As described earlier in the thesis, during the content analysis several actions were taken to ensure reliability and consistency of the coding process. These actions resulted in high coder agreement levels and the development of the coding schema resulted in an instrument that will give the same results even if the content were analysed by different coders at a different point in time. This is highly related to the concept of inter-observer consistency which is a term of reliability related to subjective judgement (Bryman & Bell, 2011). See section quality of content analysis for a deeper description of how the risk of inter-observer consistency is mitigated during the content analysis.

Another form of reliability is internal consistency or internal reliability and to test for this we have used the Cronbach's alpha test (Bryman & Bell, 2011). "A scale has internal consistency to the degree that all the items measure the same attribute or construct…in other words, the items should be related to each other" (Connely, 2011 p. 45). As shown in table 3 we have a level of 0.6798 on the Cronbach's alpha, which proves an acceptable level of internal consistency between the innovation variables when testing for innovation effect on firm stock price.

Validity

There are several different definitions of validity but they all refer to the accuracy of the research. Validity is commonly referred to in terms of whether the measurement instruments and tests performed actually measure what they are supposed to measure. Face validity can be seen as the most "basic" validity concept and refers to whether the measurement developed, at the beginning, seems to be suitable to measure the concept it is supposed to. (Bryman & Bell, 2011) The measurement tools used in this thesis are both the multiple analysis model used to capture and measure the concept under study, as well as the coding schema used to measure innovation activity within different firms. In section quality of content analysis much effort is placed on explaining how the development of the coding schema ensures validity by being very specific in its rules and categories, making the coders measure only what they are supposed to. The model ensures face validity by including control variables that are commonly used in research where the dependent variable is stock price. We have also tested each control variable in Stata to ensure that they explain changes in stock prices so that we can isolate this effect. By using known and explicit definitions of innovation, widely accepted in previous research, we can also mitigate the risk of not reaching face validity during the content analysis of the independent variables.

Another commonly referred type of validity is construct validity which refers to the usage of hypothesis drawn from relevant theory to the concept (Bryman & Bell, 2011). By using relevant theory we have stated hypotheses regarding the relationship between innovation and stock price, and then ensured that this is what the constructed methods are actually measuring.

Other quality controls

To ensure replicability of the research we have explained every aspect of the research as detailed as possible (Bryman & Bell, 2011) Additional focus has been attended to ensure replicability of the content analysis since this is the main data collection performed and since ensuring replicability of the content analysis also ensures its reliability (Krippendorf, 1980).

In regards of transferability, whether the study can be generalised and transferred into other contexts, one need to keep in mind that we are only studying one specific industry in one specific country (Bryman & Bell, 2011). As mentioned in the introduction, innovation does not have a common definition and researchers' within the area agree that innovation is carried out differently very much dependent on the context and setting of the firm that conducts it.

We therefore want to highlight that we have not performed this research with the aim for it to be transferable, we have however explained the procedures as detailed as possible for other's to be able determine whether our methods could be transferred to the context they wish to study.

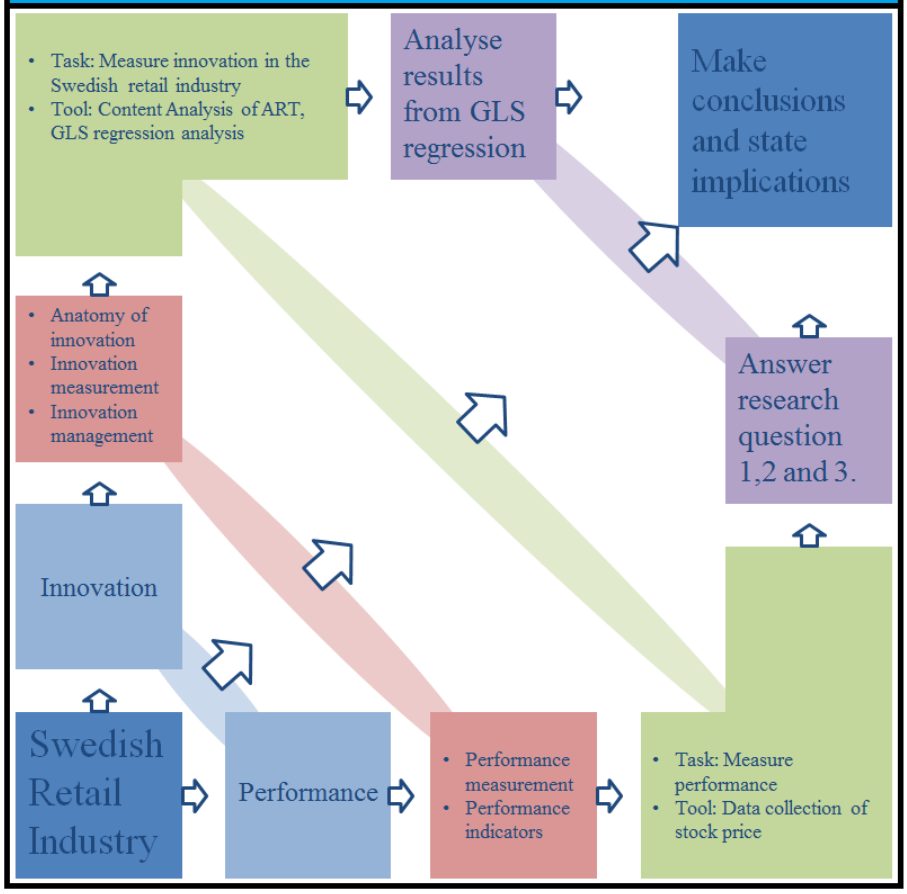
Conformability is another quality issue that needs to be discussed. Ensuring conformability means that the researchers needs to assure that the study is not affected by backgrounds and opinions that are the researchers own. (Bryman & Bell, 2011) During the content analysis, as explained earlier, we coded all annual reports individually and then compared the results. This ensures that no coder's individual interpretation has affected the data collection. In regards of conformability during the result generation and analysis phase of the thesis we have made sure to only state in text what can be traced back to statistical results and acknowledged theories.

4.4 Analytical framework

During the development of the thesis structure, to be able to provide an overview of the research process, an analytical framework was constructed. The analytical framework serves as a map that highlights key points and issues as well as gives the reader a better understanding of how the researchers have reasoned along the way. The analytical framework displays everything between the context and basic concepts under study, to the questions raised along the way, in what phases the research questions aims to be answered, how they should be answered, and what conclusions and implications we can identify. See figure 3 for the analytical framework.

Figure 3.

Analytical framework



5. Results

This chapter covers the results gained from the regression analysis performed in Stata, as well as comments clarifying the result tables.

5.1 Descriptive statistics

Table 5 shows the descriptive statistics of the analysis.

Table 5.

Descriptive statistics

```
. sum  stockprice productinnovation processinnovation marketinginnovation organizationalinnovation annualreportsize
> consumerpriceindex exchangerate numberofemployees firmage firmturnover booktomarketratio gdp Year2008

    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
  stockprice |       252    .1571228    .5909566  -.9090323   3.332298
productinn~n |       252    2.214286    1.037981          0          4
processinn~n |       252    1.472222     .907704          0          4
marketingi~n |       252    1.630952    .9993595          0          4
organizati~n |       252    1.388889    .8651944          0          4
-------------+--------------------------------------------------------
annualrepo~e |       252    85.15079    24.18391         30        218
consumerpr~x |       252     .013377    .0108934       .001       .034
exchangerate |       252   -.0056532    .0566842   -.101873   .1044076
numberofem~s |       252    9662.988    17659.01         19      81099
     firmage |       252    51.98016    57.92394          3        324
-------------+--------------------------------------------------------
firmturnover |       252    .1921212    1.616183  -.6694731   25.32762
booktomark~o |       252    .5666618     .548436  -.0456279   3.557205
         gdp |       252    .0155833    .0323388       -.052        .06
    Year2008 |       252    .1190476     .324489          0          1
```

The number of observations for each variable is 252. The dependent variable stock price has a mean of 0,157 and a standard deviation of 0,591. The independent variables product innovation, process innovation, marketing innovation and organisational innovation ranges from 0-4 which is to be expected from the measurement scale used in the content analysis. Product innovation has the highest mean value of the four innovation categories with a value of 2,214, implying that companies in our analysis, on average, have moderate product innovation activity. The standard deviation for product innovation is 1,038. The mean for annual report size is 85,151 pages and the mean for firm age is 51,980 years. Firm turnover has a mean of 0,192 with a standard deviation of 1,616.

Table 6 below, show the correlation between the variables used in our analysis. Correlations followed by * are statistically significant ($p<0,05$). There is high correlation between the four innovation categories and also between Gdp, exchange rate and consumer price index. The variables product innovation and organisational innovation are 0,404 positively correlated and

statistically significant (p<0,05). Gdp and exchange rate are 0,804 positively correlated and statistically significant (p<0,05).

Table 6.

Correlations

```
. pwcorr  stockprice productinnovation processinnovation marketinginnovation organizationalinnovation annualreportsize consumerpriceindex
> exchangerate numberofemployees firmage firmturnover booktomarketratio gdp Year2008, sig star(.05)
```

	stockp~e	produc~n	proces~n	market~n	organi~n	annual~e	consum~x	exchan~e	number~s	firmage	firmtu~r	bookto~o	gdp	Year2008
stockprice	1.0000													
productinn~n	0.3183*	1.0000												
	0.0000													
processinn~n	0.2946*	0.3996*	1.0000											
	0.0000	0.0000												
marketingi~n	0.1948*	0.3031*	0.2763*	1.0000										
	0.0019	0.0000	0.0000											
organizati~n	0.2010*	0.4037*	0.3689*	0.3510*	1.0000									
	0.0013	0.0000	0.0000	0.0000										
annualrepo~e	-0.0785	0.1371*	0.0452	-0.1434*	-0.1013	1.0000								
	0.2144	0.0296	0.4750	0.0228	0.1088									
consumerpr~x	-0.1812*	-0.0466	-0.1152	0.0183	-0.0372	-0.0817	1.0000							
	0.0039	0.4611	0.0679	0.7723	0.5569	0.1963								
exchangerate	0.2649*	-0.1081	-0.0647	-0.0049	-0.0728	-0.0888	-0.3668*	1.0000						
	0.0000	0.0867	0.3064	0.9385	0.2496	0.1601	0.0000							
numberofem~s	-0.0215	0.2211*	0.0765	-0.0284	-0.2396*	0.2751*	-0.0238	0.0093	1.0000					
	0.7346	0.0004	0.2261	0.6538	0.0001	0.0000	0.7068	0.8835						
firmage	-0.0413	0.0202	-0.0385	0.1344*	0.1871*	0.0761	-0.0140	0.0037	-0.0603	1.0000				
	0.5136	0.7494	0.5433	0.0330	0.0029	0.2284	0.8249	0.9533	0.3402					
firmturnover	0.0790	0.0410	0.0139	0.0392	0.0404	0.1899*	-0.0347	0.0146	0.0060	-0.0318	1.0000			
	0.2112	0.5175	0.8263	0.5361	0.5237	0.0025	0.5839	0.8173	0.9248	0.6153				
booktomark~o	-0.2998*	0.0460	0.0043	-0.0625	0.1736*	0.0515	-0.1039	0.0160	-0.0499	0.2901*	0.0255	1.0000		
	0.0000	0.4669	0.9462	0.3233	0.0057	0.4154	0.0998	0.8008	0.4306	0.0000	0.6867			
gdp	-0.1797*	0.0498	0.0720	0.0172	0.0313	-0.0291	0.5607*	-0.8040*	0.0440	0.0216	0.0141	-0.1266*	1.0000	
	0.0042	0.4313	0.2547	0.7863	0.6209	0.6457	0.0000	0.0000	0.4869	0.7329	0.8237	0.0446		
Year2008	-0.4123*	-0.2890*	-0.3404*	-0.1343*	-0.2507*	-0.0820	-0.0804	0.2932*	-0.0202	-0.0128	-0.0011	0.2481*	-0.2458*	1.0000
	0.0000	0.0000	0.0000	0.0331	0.0001	0.1945	0.2035	0.0000	0.7502	0.8403	0.9861	0.0001	0.0001	

Correlations do not contain signs of multicollinearity but to verify this further we performed a test for the variance inflation factor (VIF). Table 7, below, show no sign of multicollinearity. Rule of thumb suggests that variance inflation factors below 10 are proof that no multicollinearity in the model exists (O'brien, 2007).

Table 7.

Variance inflation factor

Collinearity Diagnostics

Variable	VIF	SQRT VIF	Tolerance	R-Squared
stockprice	1.87	1.37	0.5354	0.4646
productinnovation	1.68	1.30	0.5948	0.4052
processinnovation	1.47	1.21	0.6808	0.3192
marketinginnovation	1.30	1.14	0.7688	0.2312
organizationalinnovation	1.69	1.30	0.5930	0.4070
annualreportsize	1.29	1.14	0.7727	0.2273
consumerpriceindex	1.61	1.27	0.6222	0.3778
exchangerate	3.74	1.93	0.2675	0.7325
numberofemployees	1.33	1.15	0.7517	0.2483
firmage	1.22	1.10	0.8221	0.1779
firmturnover	1.08	1.04	0.9242	0.0758
booktomarketratio	1.43	1.20	0.6973	0.3027
gdp	4.17	2.04	0.2398	0.7602
Year2008	1.70	1.30	0.5886	0.4114
Mean VIF	1.83			

5.2 Regression analysis

Table 8 shows the results from the GLS regression. Three models have been tested against the independent variable stock price which are presented below as model 1, model 2 and model 3.

Table 8.

GLS Regression – stock price

	Model 1		Model 2		Model 3	
	Coef.	P>|z|	Coef.	P>|z|	Coef.	P>|z|
firmage	.0000279	0.782	.0000267	0.795	.0000313	0.763
firmturnover	.0298162	0.092	.0294898	0.080	.0299125	0.077
numberofemployees	-1.26e-07	0.953	-1.65e-06	0.458	-2.17e-06	0.349
booktomarketratio	-.2426507	0.000	-.2745011	0.000	-.2652588	0.000
consumerpriceindex	-21.4649	0.000	-18.06236	0.000	-17.74093	0.000
exchangerate	3.062571	0.004	3.180016	0.002	3.280771	0.001
gdp	11.87905	0.000	9.740649	0.000	10.32483	0.000
annualreportsize	-.0015615	0.275	-.0022699	0.105	-.0023062	0.104
Year2008						
--.	-.4488358	0.000	-.348633	0.002	-.3384668	0.004
L1.	1.064288	0.000	.8474068	0.000	.8383069	0.000
innovation			.0051534	0.000		
productinnovation					.1587875	0.000
processinnovation					.0295814	0.174
marketinginnovation					-.0129414	0.834
organizationalinnovation					-.0025666	0.787
R-sq:	within = 0.5544		within = 0.6059		within = 0.6177	
	between = 0.0381		between = 0.0959		between = 0.1382	
	overall = 0.4949		overall = 0.5471		overall = 0.5634	
Number of obs	= 222		= 222		= 222	
Number of groups	= 30		= 30		= 30	
Wald chi2(9,10,13)	= 224.91		= 280.58		= 288.02	
Prob > chi2	= 0.0000		= 0.0000		= 0.0000	

5.2.1 Model 1

In the first model of table 8 we tested all control variables against the dependent variable stock price. The overall model has a Wald chi2 test score of 224,91 with 9 degrees of freedom. The p-value (Prob > chi2) from the test (0,000) would lead us to conclude that at least one of the coefficients in the regression model is not equal to 0. A confidence interval of 95 per cent has been used to test the model. R-sq overall for model 1 is 0,495 which suggest that the control variables explains 49,5 % of the variability of the dependent variable, stock

price. Book to market ratio and consumer price index coefficients are negative and significant while exchange rate and Gdp are positive and significant at a 5 per cent significance level. Firm turnover is positive and significant at a 10 per cent significance level. Firm age, number of employees and annual report size are not significant. The dummy variable year2008 is negative and significant without one year lag while it is positive and significant with one year lag at a 5 per cent significance level.

5.2.2 Model 2

In the second model of table 8 we tested all control variables and the grouped independent variable innovation against the dependent variable stock price. The overall model have a Wald chi2 test score of 280,58 with 10 degrees of freedom. The p-value (Prob > chi2) from the test (0,000) would lead us to conclude that at least one of the coefficients in the regression model is not equal to 0. A confidence interval of 95 per cent has been used to test the model. R-sq overall for model 2 is 0,547 which suggest that the control variables and the independent variable innovation explains 54,7 per cent of the variability of the dependent variable, stock price. Results of control variables are the same as in model 1. The independent variable innovation is positive and significant at a 5 per cent significance level.

H_1 states that *innovation has a positive effect on performance in the Swedish retail industry*. From the results of model 2 in table 8 we find H_1 supported.

5.2.3 Model 3

In the third model of table 8 we tested all control variables and the independent variables product innovation, process innovation, marketing innovation and organisational innovation against the dependent variable stock price. The overall model have a Wald chi2 test score of 288,02 with 13 degrees of freedom. The p-value (Prob > chi2) from the test (0,000) would lead us to conclude that at least one of the coefficients in the regression model is not equal to 0. A confidence interval of 95 per cent has been used to test the model. R-sq overall for model 3 is 0,563 which suggest that the control variables and the independent variables explains 56,3 per cent of the variability of the dependent variable, stock price. Results of control variables are the same as in model 1. The independent variable product innovation is positive and significant at a 5 per cent significance level. The independent variables process innovation, marketing innovation and organisational innovation are not significant.

H_{2a} states that *product innovation has a positive effect on firm performance in the Swedish retail industry*. From the results of model 3 in table 8 we find H_{2a} supported.

H_{2b} states that *process innovation has a positive effect on firm performance in the Swedish retail industry.* From the results of model 3 in table 8 we find no support for H_{2b}.

H_{2c} states that *marketing innovation has a positive effect on firm performance in the Swedish retail industry.* From the results of model 3 in table 8 we find no support for H_{2c}.

H_{2d} states that *organisational innovation has a positive effect on firm performance in the Swedish retail industry.* From the results of model 3 in table 8 we find no support for H_{2d}.

H_{3a} states that *product innovation impact firm performance positively, to a greater extent than the other innovation activities, in the Swedish retail industry.* From the results of model 3 in table 8 we find H_{3a} partly supported.

H_{3b} states that *process innovation impact firm performance positively, to a greater extent than the other innovation activities, in the Swedish retail industry.* From the results of model 3 in table 8 we find no support for H_{3b}.

H_{3c} states that *marketing innovation impact firm performance positively, to a greater extent than the other innovation activities, in the Swedish retail industry.* From the results of model 3 in table 8 we find no support for H_{3c}.

H_{3d} states that *organisational innovation impact firm performance positively, to a greater extent than the other innovation activities, in the Swedish retail industry.* From the results of model 3 in table 8 we find no support for H_{3d}.

Table 9. Hypotheses	
H1	Supported
H2a	Supported
H2b	Not supported
H2c	Not supported
H2d	Not supported
H3a	Partly supported
H3b	Not supported
H3c	Not supported
H3d	Not supported

6. Discussion

This chapter covers the analysis and discussion of the concepts under study by synthesising the theoretical and the empirical findings. The implications that can be drawn from the findings are later covered in chapter 7.

6.1 Innovation and stock price relationship

RQ1: Does innovation drive firm performance in the Swedish retail industry?

Despite the fact that innovation is very industry and content specific in its relation to firm performance, it is agreed within the research field that it should be considered an integral part of each firm's competitive portfolio (Brown & Eisenhart, 1995). To be able to test our first hypothesis, that innovation is positively related to stock price we needed to group the independent variables to one single variable. By grouping the studied categories; product, process, marketing, and organisational innovation we created one variable called innovation. As described in the methodology section, we performed a Cronbach's alpha test to test for internal consistency to ensure that grouping the variables was acceptable. The GLS regression shows that the grouped variable innovation is statistically significant and positively related to the dependent variable stock price, which provides support for our first hypothesis.

With innovation being theoretically agreed to having a given place in each firms' strategic portfolio (no matter industry), this result could to some extent be expected for firms in the Swedish retail industry as for any other (Brown & Eisenhart, 1995). Earlier research also state that the Swedish retail industry is among the top spenders on innovation in the country. This is also an implication for assuming that innovation investment does affect performance within this industry, since the main objective for pursuing innovation (across industries) often is to reach a higher performance level. (SCB, 2012; OECD, 2005) Earlier research of innovation in Swedish industries is commonly divided to study the industry- and service- sectors separately (SCB, 2012). The characteristics of the companies in our sample makes the Swedish retail industry consisting of both goods and service producing firms, meaning that little implications regarding the specific industry can be drawn from such sector-divided research. Therefore we found it important to answer research question 1 even if the result was to some extent expected.

In earlier studies, several different performance indicators are used to measure innovation's impact on firm performance. As mentioned in the literature review, innovation sales returns, profits, and turnover are common indicators. (Cordero, 1990; Innovation Management, 2015; OECD, 2005) Within finance research, stock price is the more common. (Vega, 2006; Bacidore et al, 1997) We have found it very interesting to measure innovation towards stock price since it has rarely been done before. Other researchers contribute both to academia and practice by measuring performance through other measures, and by using a different and less common indicator, we extend this knowledge further. When measuring towards one performance indicator it is important to keep in mind that the results in question, only applies to this performance indicator. Since performance can be expressed by different indicators dependent on the researcher's choice, and since there is no best practice to apply, it would also have been interesting to see if hypothesis 1 would have been supported if innovation was measured towards other performance indicators as well. One can assume that this would be the case with the literature supporting innovation to be connected to performance regardless of industry (Brown & Eisenhart, 1995).

6.2 Specific innovation categories and stock price relationships

RQ2: What type of innovation within the Swedish retail industry drives firm performance?

Knowing that innovation overall is positively related to firm performance in terms of stock price, we wanted to dig deeper into the specific innovation categories. As mentioned, research regarding innovation activity in Swedish firms is often studied by dividing the market into either industry- or service sector. (SCB, 2012; OECD, 2005) Since the retail industry does not fit within these broad definitions, industry specific knowledge is lacking when analysing the innovation effects on firm performance. By using known definitions of innovation categories we were able to test different categories effect on stock price. Our findings show that the category product innovation is positively and significantly related to stock price. In our research, both new goods and new services are included in the category product innovation, therefore the findings does not implicate whether only service- or goods-innovation alone are positively related to stock price variations. The sample firms characteristics, whether their business offerings focuses on delivering goods or services should however be able to guide the innovation investment decision-makers where to direct investment if the aim is to pursue product innovation to increase stock price.

As theory describes, within the fifth generation of innovation processes firms focus more on competition and being first to market than ever before. (Rothwell, 1994) The reason for product innovations positive effect on stock price could be connected to this fact. The Swedish retail industry is as mentioned very competitive and new actors are establishing themselves continuously. (Fastighetsnytt, 2013) Investors on the stock market apparently assign value to product innovations within the industry, which implicates that investors believe product innovation to be a good investment for firms to be able to compete on the market.

For the innovation categories process innovation, marketing innovation and organisational innovation our findings show no significant results, which makes it impossible to make any viable statements regarding the effect on stock price. The reason for this could be that the market do not consider these innovation activities as contributing to strengthening the competitive position of the firm, or that investors are unable to assign value within our time frame for these innovation activities. Being under the assumption that the stock market is perfectly effective, we assume that investors should be able to assign the correct value instantly to innovations that might take years to carry out. In theory this is supported by the arguments for a perfect financial market (Vega, 2006; Bacidore et al, 1997). However, one can always discuss whether this is also the case in all situations in practice. If the financial market in practice is not perfect one solution would be to use different performance indicators for testing each of the independent variables to capture the nature of that specific innovation category. It is difficult to discuss whether the results would have been different if another or several other performance indicators would have been used. Testing for other performance indicators have not been possible within our time frame and we therefor selected the performance indicator that we find best in regards to theoretical suggestions of what a performance indicator should capture. (Schentler, Lindner & Gleich, 2010) Another solution, if the financial market not is able to assign value to the innovation categories within our time frame, would be to lag the independent variables to test if the activities performed have any delayed effects. Using our model we were unable to test for lag in our independent variables since the model cannot incorporate that many variables without skewing the results.

In table 5 it is shown that product innovation is mentioned more times on average than the other innovation categories. By selecting content analysis of ART as the tool for data collection, and by ensuring its validity and reliability, we argue that what is written in the

annual report also mirrors the activities that have been carried our during the year (Michalisin, 2001). However, it is interesting to discuss the fact that annual reports risk to serve as a communication tool towards stakeholders and that the annual reports might be over-positive. If this is the case, the implication to be drawn is that companies seem to believe that communicating that product innovation has been performed ensures stakeholders of that the firm is doing well or that product innovation is easier to communicate than other innovation categories.

RQ3: If any, what type of innovation contributes the most to firm performance in the Swedish retail industry?

Having tested if innovation as one variable and if the innovation categories separately have any effect on stock price it also becomes interesting to investigate whether there is support for any of the categories to be superior to the others in terms of a positive relation to stock price. We have stated that hypothesis 3a is partly supported due to the fact that product innovation is the only independent variable that we have found having any positive and significant effect on stock price. Since process-, marketing- and organisational innovation are not significant we cannot argue for sure that product innovation is the superior innovation activity to increase stock price. To be able to make such claims, process-, marketing-, and organisational innovation would have to be significant and negative, or significant and less positive than product innovation. However, one could argue that if you were a decision maker that had to choose between the four innovation categories, the most reasonable choice would be product innovation because our findings show that there is a positive and significant relationship between product innovation and stock price and the other relationships are unknown. It is worth mentioning that our tests are based on one performance indicator, stock price, and therefore we can only suggest that product innovation is superior to process-, marketing-, and organisational innovation in terms of increasing stock price. If tests were performed with the innovation categories against any other performance indicator the results might look different. We suggest further studies regarding testing the data collected towards more than one performance indicator to assess whether a superior innovation category within the Swedish retail industry exists.

7. Implications

The Swedish retail industry is a top spender on innovation and recent numbers show the industry to be competitive and growing, and expected to keep doing so during the coming years. With strengthened performance being the goal of most innovation activity regardless of industry, the innovation managers and decision-makers play an integral part in firm competitiveness and survival. With innovation being a complex activity, and its success depending both on internal and external context features, these managers do not have an easy job. Being that innovation in the Swedish region is usually studied by grouping industries very broadly, little theoretical evidence is provided regarding specific industries innovation activities and their relation to firm performance. Innovation and performance, two very broadly defined concepts, measured differently depending on the context under study also makes best practices nearly impossible to copy for a specific firm. By testing innovation both as one category and by segmenting it into different categories we can provide implications for decision makers within the Swedish retail industry. Findings showing support for innovation and especially product innovation to be positively related to stock price implicates that innovation investment managers within the Swedish retail industry should focus on product innovation. As mentioned earlier, this is the case when testing only towards stock price. The implications that can be drawn from the results therefore are applicable if the goal if the innovation manager is to increase shareholder value.

8. Limitations

The research conducted provide a contribution both to practitioners and to academia. However, as with most research, there are some limitations to take into consideration. Firstly, the independent variables used, the different innovation categories, are collected through a content analysis based on annual reports from the studied firms. Even though theory supports ART to be a valid source when studying firm activity throughout the year, one need to keep in mind that there is always a risk of the content being over-positive and used as a marketing material to ensure stakeholders of their interests. When studying ART another issue that becomes important to discuss is the fact that innovations mentioned in the annual report are successfully completed innovations. This implicates a "survival bias" meaning that with the methods applied, we can only study the effect on stock price from successful innovation and not from innovations that were not fully carried out.

Secondly, when performing a content analysis, there is always risk of not being able to eliminate the risk of inter-coder biasness totally. We have accounted as precise as possible the methods used for performing the analysis and developing the coding schema, however we are aware that reaching complete un-biasness is almost impossible. This is a known phenomenon in previous research as well and we have found theoretical support for the usage of the method and followed the existing guidelines to mitigate the risk.

Thirdly, we would like to highlight the fact that this study is conducted by testing innovation towards one performance indicator. The aim of the thesis has been to test different innovation activities towards stock price, but one need to keep in mind that there are other performance indicators that could generate different results if used. Being that there is no perfect performance indicator, this is a limitation that we could not mitigate within the timeframe of this thesis.

Finally, we need to consider the case of generalisability of the findings. Since we are only studying one specific industry in Sweden this implicates a threat to the external validity. In our sample, there are several characteristics of the studied firms that makes it difficult to generalise the findings to other geographical locations and to other industries.

9. Conclusion

The Swedish retail industry is a growing and competitive business that focuses extensively on innovation and innovative activities. With growing consumer demands and increased international competition, it has become of enhanced importance to be able to measure innovation and performance. Innovation investments are high within the industry and managers and decision makers phase extremely challenging tasks regarding what innovation to focus on, meaning where to direct investment. In order to meet these challenges increased knowledge regarding innovation activities effect on performance becomes vital. This study has investigated whether innovation has a positive effect on firm performance (stock price) as well as whether implications can be found for what types of innovation that are likely to affect stock price variances positively. We have found that when grouping the innovation categories; product innovation, process innovation, marketing innovation, and organisational innovation together the grouped variable innovation has a significant and positive relation to firm performance. This finding supports theoretical knowledge that states that innovation is of importance to firm performance and that it has become a significant factor in each firms' competitive portfolio. We are now able to state that this is indeed true for the Swedish retail industry. Further, our findings show that product innovation is the only innovation category that has a significant impact on stock price, and that this impact is positive.

9.1 Theoretical and practical contribution

Even if researchers agree that innovation is important to firm performance, very few studies have been conducted that investigates the industry specific context of innovation. By presenting findings from the Swedish retail industry showing that innovation, and especially product innovation, has a positive effect on firm performance, we contribute with important findings to the existing theoretical base. Innovation is commonly studied with broad definitions and within the Swedish market, often studied in terms of either the industrial- or service sector separately. When innovation is studied in the retail industry, it is often measured by using patents and trademarks. By applying a different measurement metric for innovation our findings and their implications contribute both to filling a gap in existent innovation literature, as well as providing valuable insight to practitioners working with innovation investment and innovation decisions. By providing clear descriptions of how research has been conducted as well as highlighting the limitations of this thesis, we have given a fair and precise description of the research conducted.

9.2 Further research

As earlier explained, we have provided as clear and precise explanations of our research methods as possible for others to be able to transform such methods into other contexts and research areas if wanted. We have found the Swedish retail industry with its characteristics very interesting to study and hope that this industry specific innovation research also can inspire others to further investigate Swedish industries. Performing similar studies with a sample from other geographical regions would also be of interest to be able to perform comparison between countries. As is mentioned before, testing the same data set towards more than one performance indicator could also be a subject for further studies.

With Sweden profiling itself as an innovative country with much emphasis on entrepreneurship and innovation it would be of interest to perform similar studies highlighting the governmental implications that the findings could provide. It would for example be interesting to investigate how innovation investment that is governmentally funded effects stock price variations.

10. Personal reflections

When studying topics as broad as innovation and performance, we have found it very efficient to conduct the research in pairs. The background of knowledge needed to be able to conduct the research has been extensive, it would not have been possible for one person alone. By working in pairs we have been able to investigate the subject both on a broader level as well as being able to dig deeper into areas of interest. We have found the master thesis an excellent opportunity to both practice team work, as well as extending our existing knowledge within the area of innovation. Early in the thesis work, we decided to focus on a topic of interest and at the same time challenge ourselves to explore research methods that we were earlier unfamiliar with. Neither of us had any experience of content analysis nor coding of contexts which made the execution of the methods very interesting. By working in pairs we were also able to divide some of the work which lead to that we could conduct a more extensive research as well as learn from each other's processes and findings. The most challenging part of the research has definitely been the content analysis, both in terms of time consumption and in terms of ensuring its quality. By performing several quality' tests and also by ending up with individually coding each ART to then compare the results, we however feel that we succeeded the task and gained lots of experience during the process.

In the dividing of the tasks during the thesis work we have both taken into consideration each persons perceived strengths, skills and areas of interest, as well as challenged ourselves to explore methods and focus areas where we lacked pre-knowledge. This has led to a thesis that we proudly can state is influenced by both author's strengths, at the same time as it reflects our will to continuously extend our knowledge base and challenge ourselves to reach new levels of professionalism.

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12. Appendix

Appendix 1

Appendix 1

Population, census sample and final sample

Population	Census Sample	Final Sample	Data collected between:
AAK	AAK	AAK	2006-2013
Autoliv	Autoliv	Autoliv	2006-2013
Axfood	Axfood	Axfood	2004-2013
Betsson	Betsson	Betsson	2008-2013
Bilia	Bilia	Bilia	2004-2013
Björn Borg	Björn Borg	Björn Borg	2007-2013
Clas Ohlson	Clas Ohlson	Clas Ohlson	2005-2013
Duni	Duni	Duni	2007-2013
Electrolux	Electrolux	Electrolux	2004-2013
H&M	H&M	H&M	2004-2013
Haldex	Haldex	Haldex	2005-2013
Hemtex	Hemtex	Hemtex	2006-2013
Husqvarna	Husqvarna	Husqvarna	2007-2013
ICA	ICA	ICA	2007-2013
Lammhults Design Group	Lammhults Design Group	Lammhults Design Group	2004-2013
Mekonomen	Mekonomen	Mekonomen	2007-2013
Midsona	Midsona	Midsona	2007-2013
Modern Times Group	Modern Times Group	Modern Times Group	2004-2013
Net Entertainment	Net Entertainment	Net Entertainment	2007-2013
Nobia	Nobia	Nobia	2004-2013
Nordic Service Partner	Nordic Service Partner	Nordic Service Partner	2007-2013
Odd molly	Odd molly	Odd molly	2007-2013
Opcon	Opcon	Opcon	2004-2013
Oriflame	Oriflame	Oriflame	2005-2013
Rezidor Hotel Group	Rezidor Hotel Group	Rezidor Hotel Group	2007-2013
SCA	SCA	SCA	2004-2013
Swedish Match	Swedish Match	Swedish Match	2004-2013
Swedol	Swedol	Swedol	2006-2013
Trade Doubler	Trade Doubler	Trade Doubler	2007-2013
VBG Group	VBG Group	VBG Group	2004-2013
Black Earth Farming	Black Earth Farming	Missing Data	
Bulten	Bulten		
Byggmax Group	Byggmax Group		
Cloetta	Cloetta		
Electra Gruppen	Electra Gruppen		
Eniro	Eniro		
Fenix Outdoor International	Fenix Outdoor International		
Gränges	Gränges		
KABE	KABE		
Kappahl	Kappahl		
MQ	MQ		
New Wave	New Wave		
Qliro Group	Qliro Group		
Retails And Brands	Retails And Brands		
Scandic Standard	Scandic Standard		
Scandinavian Airlines	Scandinavian Airlines		
Ski Star	Ski Star		
Thule Group	Thule Group		
Trigon Agri	Trigon Agri		
Unibet Group	Unibet Group		
Venue Retail Group	Venue Retail Group		

Appendix 2

Appendix 2a

Appendix 2a **Definition of product innovation**		
	Product Innovation	
# mentioned in annual report	Brief	Definition
	Introduction of a new good	A product innovation is the introduction of a good that is new or significantly improved with respect to its characteristics or intended uses. This includes significant improvements in technical specifications, components and materials, incorporated software, user friendliness or other functional characteristics. The development of a new use for a product with only minor changes to its technical specifications is a product innovation...
	Introduction of a new service	A product innovation is the introduction of a service that is new or significantly improved with respect to its characteristics or intended uses. This includes significant improvements in technical specifications, components and materials, incorporated software, user friendliness or other functional characteristics. Product innovations in services can include significant improvements in how they are provided (for example, in terms of their efficiency or speed), the addition of new functions or characteristics to existing services, or the introduction of entirely new services.

Appendix 2b

Appendix 2b

Definition of process innovation

	Process Innovation	
# mentioned in annual report	Brief	Definition
	Implementation of a new or significantly improved production method	A process innovation is the implementation of a new or significantly improved production or delivery method. Production methods involve the techniques, equipment and software used to produce goods or services. Process innovations include new or significantly improved methods for the creation and provision of services. They can involve significant changes in the equipment and software used in services-oriented firms or in the procedures or techniques that are employed to deliver services.
	Implementation of a new or significantly improved delivery method	A process innovation is the implementation of a new or significantly improved production or delivery method. Process innovations include new or significantly improved methods for the creation and provision of services. They can involve significant changes in the equipment and software used in services-oriented firms or in the procedures or techniques that are employed to deliver services.
	Implementation of a new or significantly improved techniques, equipment and software in ancillary support activities	Process innovations covers new or significantly improved techniques, equipment and software in ancillary support activities, such as purchasing, accounting, computing and maintenance.
	Implementation of a new or significantly improved information and communication technology	The implementation of new or significantly improved information and communication technology (ICT) is a process innovation if it is intended to improve the efficiency and/or quality of an ancillary support activity.

Appendix 2c

Appendix 2c **Definition of marketing innovation**		
	Marketing Innovation	
# mentioned in annual report	Brief	Definition
	Implementation of a new design or packaging method	The distinguishing feature of a marketing innovation compared to other changes in a firm's marketing instruments is the implementation of a marketing method not previously used by the firm. New marketing methods can be implemented for both new and existing products. Marketing innovations include significant changes in product design that are part of a new marketing concept. Product design changes here refer to changes in product form and appearance that do not alter the product's functional or user characteristics. They also include changes in the packaging of products
	Implementation of a new product placement method	The distinguishing feature of a marketing innovation compared to other changes in a firm's marketing instruments is the implementation of a marketing method not previously used by the firm. New marketing methods can be implemented for both new and existing products. New marketing methods in product placement primarily involve the introduction of new sales channels. Sales channels here refer to the methods used to sell goods and services to customers, and not logistics methods (transport, storing and handling of products) which deal mainly with efficiency.
	Implementation of a new product promotion or pricing method	The distinguishing feature of a marketing innovation compared to other changes in a firm's marketing instruments is the implementation of a marketing method not previously used by the firm. New marketing methods can be implemented for both new and existing products. New marketing methods in product promotion involve the use of new concepts for promoting a firm's goods and services... Innovations in pricing involve the use of new pricing strategies to market the firm's goods or services.
	Entering a new market	New marketing methods can be implemented for both new and existing products. Marketing innovations are aimed at better addressing customer needs, opening up new markets, or newly positioning a firm's product on the market, with the objective of increasing the firm's sales.

Appendix 2d

Appendix 2d **Definition of organisational innovation**		
	Organizational Innovation	
# mentioned in annual report	Brief	Definition
	New methods for organising routines and procedures for the conduct of work	Organisational innovations in business practices involve the implementation of new methods for organising routines and procedures for the conduct of work
	New ways of organising relations with other firms or public institutions	New organisational methods in a firm's external relations involve the implementation of new ways of organising relations with other firms or public institutions, such as the establishment of new types of collaborations with research organisations or customers, new methods of integration with suppliers, and the outsourcing or subcontracting for the first time of business activities in production, procuring, distribution, recruiting and ancillary services.
	New mergers and acquisitions	Mergers with, or the acquisition of, other firms are not considered organisational innovations, even if a firm merges with or acquires other firms for the first time. Mergers and acquisitions may involve organizational innovations, however, if the firm develops or adopts new organization methods in the course of the merger or acquisition.

Appendix 2e

Appendix 2e **Definition of firm innovation**		
	Firm Innovation	
# mentioned in annual report	Brief	Definition
	Product Innovation	A product innovation is the introduction of a good or service that is new or significantly improved with respect to its characteristics or intended uses...
	Process Innovation	A process innovation is the implementation of a new or significantly improved production or delivery method...
	Marketing Innovation	A marketing innovation is the implementation of a new marketing method involving significant changes in product design or packaging, product placement, product promotion or pricing...
	Organizational Innovation	An organisational innovation is the implementation of a new organizational method in the firm's business practices, workplace organisation or external relations...